

12/24/02

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|                          |                              |
|--------------------------|------------------------------|
| abutment                 | abut.                        |
| acre                     | ac                           |
| aggregate                | aggr.                        |
| ahead                    | AH                           |
| alternate                | alt.                         |
| and                      | &                            |
| and others               | et al                        |
| and wife                 | et ux                        |
| and so forth (et cetera) | etc.                         |
| approach                 | appr.                        |
| approximate              | approx.                      |
| asphalt                  | asph.                        |
| at                       | @                            |
| average daily traffic    | ADT                          |
| back                     | BK                           |
| back to back             | b. to b.                     |
| balance point            | BP                           |
| batter                   | btr.                         |
| beam                     | bm.                          |
| bearing                  | brg.                         |
| beginning                | beg.                         |
| bench mark               | BM                           |
| bridge                   | br.                          |
| centerline               | ℓ                            |
| center to center         | cc or c. to c.               |
| centers                  | ctrs.                        |
| channel change           | ch. ch.                      |
| clear                    | clr.                         |
| column                   | col.                         |
| concrete                 | conc.                        |
| connection               | conn.                        |
| construction             | constr.                      |
| construction joint       | constr. jt.                  |
| contingent sum           | CTSM                         |
| continuous               | cont.                        |
| Contracting Officer      | CO                           |
| control point            | CP                           |
| corrugated               | corr.                        |
| corrugated metal pipe    | CMP                          |
| county                   | cty.                         |
| countersink              | ctsk.                        |
| creek                    | cr.                          |
| cubic inch(es)           | cuin, in <sup>3</sup> or in3 |
| cubic foot(feet)         | cuff, ft <sup>3</sup> or ft3 |
| cubic yard(s)            | cuyd, yd <sup>3</sup> or yd3 |
| culvert                  | culv.                        |
| curve central angle      | Δc                           |
| degree                   | ° or deg.                    |
| degree Fahrenheit        | °F                           |
| design hourly volume     | DHV                          |
| design speed             | V                            |
| diagonal                 | diag.                        |
| diameter                 | dia., D, or ∅                |
| diaphragm                | diaph.                       |
| district                 | Dist.                        |
| donation land claim      | DLC                          |
| drawing(s)               | drwg(s).                     |
| east                     | E                            |
| edge of pavement         | EP                           |
| edge of water            | EW                           |
| edge of road             | ER                           |
| elevation                | elev.                        |
| elevation with number    | EL. 94.16 ft                 |
| embankment               | emb.                         |
| Engineer(s)              | engr(s).                     |
| equation                 | EQ or eq.                    |
| excavation               | exc.                         |
| expansion joint          | exp. jt.                     |
| Federal                  | Fed.                         |
| finish                   | fin.                         |
| flange                   | flg.                         |
| foot (feet)              | ' or ft                      |
| foot pounds              | ft-lb                        |
| footing                  | ftg.                         |
| for example              | e.g.                         |
| gallon                   | gal                          |
| galvanized               | galv.                        |
| gage (gauge)             | ga.                          |
| headwall                 | hdwl.                        |
| hexagon                  | hex.                         |
| high water               | HW                           |
| highway                  | hwy.                         |
| house                    | hse.                         |
| homestead entry survey   | HES                          |
| identification           | iden.                        |
| inches                   | " or in                      |
| inclusive                | incl.                        |
| inside diameter          | ID                           |
| joint                    | jt.                          |
| lamination               | lam.                         |
| latitude                 | lat.                         |
| left                     | lt. or LT                    |
| length of curve          | L                            |
| length of spiral         | Ls                           |

|                                   |                              |
|-----------------------------------|------------------------------|
| linear foot (feet)                | lnft                         |
| longitudinal                      | long.                        |
| low water                         | LW                           |
| lump sum                          | LPSM                         |
| magnetic                          | mag.                         |
| main line                         | M.L.                         |
| maintenance                       | maint.                       |
| material                          | matl.                        |
| maximum                           | max.                         |
| mile                              | mi                           |
| mile per hour                     | mph                          |
| mile post                         | M.P.                         |
| minute(s) (angular)               | '                            |
| minimum                           | min.                         |
| miscellaneous                     | misc.                        |
| monument                          | mon.                         |
| mountain(s)                       | mtn(s).                      |
| negative                          | neg.                         |
| north                             | N                            |
| number                            | no.                          |
| original ground                   | OG                           |
| out to out                        | o. to o.                     |
| outside diameter                  | OD                           |
| pavement                          | pvmt.                        |
| percent                           | pct. or %                    |
| perforate                         | perf.                        |
| plate                             | pl.                          |
| point of compound curve           | PCC                          |
| point of curve                    | PC                           |
| point on curve                    | P0C                          |
| point of intersection             | PI                           |
| point of spiral to curve          | PSC or SC                    |
| point of curve to spiral          | PCS or CS                    |
| point on spiral                   | P0S                          |
| point of spiral to reverse spiral | SRS                          |
| point of spiral to tangent        | PST or ST                    |
| point on tangent                  | P0T                          |
| point of tangent to spiral        | PS or TS                     |
| point of tangent                  | PT                           |
| pound                             | lb                           |
| pounds per square Inch            | psi                          |
| pounds per square foot            | psf                          |
| pounds per cubic foot             | pcf                          |
| project                           | proj.                        |
| quantities                        | quant.                       |
| radian                            | rad                          |
| radius                            | R                            |
| range                             | R.                           |
| reconstruction                    | reconst.                     |
| reinforcement                     | reinf.                       |
| required                          | reqd.                        |
| reservoir or Reservation          | res.                         |
| retaining wall                    | ret. wall                    |
| right                             | rt. or RT                    |
| right-of-way                      | R/W                          |
| road                              | rd.                          |
| roadway                           | rdwy.                        |
| route                             | rte.                         |
| school                            | sch.                         |
| second (angular)                  | "                            |
| second (time)                     | s                            |
| section                           | sec.                         |
| slope protection                  | sl. prot.                    |
| south                             | S                            |
| spacing, Spaces or Spaced         | spa.                         |
| specification                     | spec.                        |
| spiral central angle              | θs                           |
| square                            | sq                           |
| square foot                       | sqft, ft <sup>2</sup> or ft2 |
| square yard                       | sayd, yd <sup>2</sup> or yd2 |
| standard                          | std.                         |
| station                           | sta.                         |
| stiffener                         | stiff.                       |
| straight                          | str.                         |
| street                            | st.                          |
| stringer                          | stgr.                        |
| structural                        | struc.                       |
| superelevation rate               | e                            |
| symmetrical                       | sym.                         |
| tangent                           | tan.                         |
| tangent distance                  | T                            |
| tangent distance (spiral curves)  | Ts                           |
| temporary bench mark              | TBM                          |
| thousand feet board measure       | MFBM                         |
| thousand gallon                   | M-gal                        |
| thousand square feet              | M-sqft                       |
| that is                           | i.e.                         |
| thread                            | thd.                         |
| total central angle               | Δ                            |
| township                          | T.                           |
| typical                           | typ.                         |
| vehicles per hour                 | vph                          |
| vertical point of intersection    | VPI                          |
| warehouse                         | whs.                         |
| west                              | W                            |

NATIONAL BOUNDARY

STATE BOUNDARY

COUNTY BOUNDARY

CITY BOUNDARY

TOWNSHIP or RANGE LINE

SECTION LINE

1/4 SECTION LINE

1/16 SECTION LINE

NATIONAL PARK or FOREST BOUNDARY

PROPERTY LINE

RIGHT-OF-WAY LINE

RIGHT-OF-WAY LINE  
with MONUMENT

EASEMENT (Permanent; Non-Permanent)

SLOPE STAKE

ROADWAY, EXISTING

RAILROAD

SILT FENCE

TRAIL

INTERMITTENT DRAINAGE  
and SMALL CREEK

LARGE CREEK/RIVER

LAKE, POND or RESERVOIR; MARSHLAND

SPRING

TREELINE; TREE

MATERIAL SOURCE

SECTION CORNER

1/4 SECTION CORNER

1/16 SECTION or PROPERTY CORNER

PROPERTY CORNER

PARCEL NUMBER

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P/L

R/W

R/W

R/W

R/W

P/E

C/E

TOP OF CUT

TOE OF FILL

TRANSITION

-----

SINGLE TRACK  
MULTIPLE TRACK

=====

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No Symbol

400

NOTE:

1. Other symbols used in the plans will be shown  
in a legend on the appropriate plan sheet.

NORTH ARROW



| STATE | PROJECT | SHEET<br>NUMBER |
|-------|---------|-----------------|
|       |         | A.2             |

FENCE

EXISTING

PROPOSED

X—X—X

XX XX XX

GATE with FENCE

X—X—X—X

XX XX XX XX

CATTLEGUARD

⏏

⏏

GUARDRAIL

□ □ □ □

— — — —

Post mounted, single

σ

σ

Post mounted, double

σσ

σσ

Portable

No Symbol

ππ

RETAINING WALL

— — — — wall face — — — —

POWER POLE UTILITIES

P=power, T=telephone

— — — — P — — — —

— — — — P — — — —

UNDERGROUND UTILITIES

G=gas, O=oil, P=power,  
SA= sanitary sewer,  
SS=storm sewer,  
T=telephone, W=water

— — — — P — — — —

— — — — P — — — —

SUPPORT POLE with ANCHOR

— — — —

— — — —

TELEPHONE BOOTH or PEDESTAL

□ TB or TP

■ TB or TP

STREET LIGHT

⦿ ⦿

⦿ ⦿

BRIDGE

— — — —

— — — —

PIPE CULVERT (arrow shows flow)

— — — —

— — — —

PIPE CULVERT with END SECTION

— — — —

— — — —

PIPE CULVERT with HEADWALL

— — — —

— — — —

BOX CULVERT

— — — —

— — — —

CULVERT with DROP INLET

— — — —

— — — —

UNDERDRAIN

— — — —

— — — —

CONTROL POINT

CP

▲

I2345

No Symbol

SURVEY MONUMENT

▲

No Symbol

HUB & TACK

○

No Symbol

SPOT ELEVATION

x EL. 1234.56 ft

No Symbol

COORDINATE GRID TICK

— — — —

No Symbol

BUILDING

— — — —

— — — —

BORING LOCATION

●

No Symbol

RIPRAP

No Symbol

— — — —

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

DETAIL  
PLAN SYMBOLS  
and  
ABBREVIATIONS

DETAIL APPROVED FOR USE 11/2001

REVISED:

DETAIL  
W101-1

abutment  
aggregate  
ahead  
alternate  
and  
and others  
and wife  
and so forth (et cetera)  
approach  
approximate  
asphalt  
at  
average daily traffic

back  
back to back  
balance point  
batter  
beam  
bearing  
beginning  
bench mark  
bridge

centerline  
center to center  
centers  
channel change  
clear  
column  
concrete  
connection  
construction  
construction joint  
contingent sum  
continuous  
Contracting Officer  
control point  
corrugated  
corrugated metal pipe  
coulomb  
county  
countersink  
creek  
cubic meter  
culvert  
curve central angle

degree  
degree Celsius  
design hourly volume  
design speed  
diagonal  
diameter  
diaphragm  
district  
donation land claim  
drawing(s)

east  
edge of pavement  
edge of water  
edge of road  
elevation  
elevation with number  
embankment  
Engineer(s)  
equation  
excavation  
expansion joint

Federal  
finish  
flange  
footing  
for example

galvanized  
gage (gauge)

headwall  
hectare  
hexagon  
high water  
highway  
house  
homestead entry survey

identification  
inclusive  
inside diameter

joint

kilogram  
kilometer  
kilometer per hour  
kilometer post

lamination  
latitude  
left

abut.  
aggr.  
AH  
alt.  
&  
et al  
et ux  
etc.  
appr.  
approx.  
asph.  
@  
ADT

BK  
b. to b.  
BP  
btr.  
bm.  
brg.  
beg.  
BM  
br.

£  
cc or c. to c.  
ctrs.  
ch. ch.  
clr.  
col.  
conc.  
conn.  
constr.  
constr. jt.  
CTSM  
cont.  
CO  
CP  
corr.  
CMP  
C  
cty.  
ctsk.  
cr.  
m³ or m3  
culv.  
Δc

° or deg.  
°C  
DHV  
V  
diag.  
dia., D, or Ø  
diaph.  
Dist.  
DLC  
drwg(s).

E  
EP  
EW  
ER  
elev.  
El. 94.06 m  
emb.  
engr(s).  
EQ or eq.  
exc.  
exp. jt.

Fed.  
fin.  
flg.  
ftg.  
e.g.

galv.  
ga.

hdwl.  
ha  
hex.  
HW  
hwy.  
hse.  
HES

iden.  
incl.  
ID

jt.

kg  
km  
km/h  
K.M.

lam.  
lat.  
lt. or LT

length of curve  
length of spiral  
liter  
longitudinal  
low water  
lump sum

magnetic  
main line  
maintenance  
material  
maximum  
meter (measurement)  
metric ton  
millimeter  
mile post  
minute(s) (angular)  
minimum  
miscellaneous  
monument  
mountain(s)

negative  
north  
newton  
number

original ground  
out to out  
outside diameter

pascal  
pavement  
percent  
perforate  
plate  
point of compound curve  
point of curve  
point on curve  
point of intersection  
point of spiral to curve  
point of curve to spiral  
point on spiral  
point of spiral to reverse spiral  
point of spiral to tangent  
point on tangent  
point of tangent to spiral  
point of tangent  
project

quantities

radian  
radius  
range  
reconstruction  
reinforcement  
required  
reservoir or Reservation  
retaining wall  
right  
right-of-way  
road  
roadway  
route

school  
second (angular)  
second (time)  
section  
slope protection  
south  
spacing, Spaces or Spaced  
specification  
spiral central angle  
square  
square meter  
standard  
station  
stiffener  
straight  
street  
stringer  
structural  
superelevation rate  
symmetrical

tangent  
tangent distance  
tangent distance (spiraled curve)  
temporary bench mark  
that is  
thread  
total central angle  
township  
typical

vehicles per hour  
vertical point of intersection  
warehouse  
west

L  
Ls  
L  
long.  
LW  
LPSM

mag.  
M.L.  
maint.  
matl.  
max.  
m  
t  
mm  
M.P.  
,  
min.  
misc.  
mon.  
mtn(s).

neg.  
N  
N  
no.

OG  
o. to o.  
OD

Pa  
pvmt.  
pct. or %  
perf.  
pl.  
PCC  
PC  
POC  
PI  
PSC or SC  
PCS or CS  
POS  
SRS  
PST or ST  
POT  
PS or TS  
PT  
proj.

quant.

rad  
R  
R.  
reconst.  
reinf.  
reqd.  
res.  
ret. wall  
rt. or RT  
R/W  
rd.  
rdwy.  
rte.

sch.  
"  
s  
sec.  
sl. prot.  
S  
spa.  
spec.  
ths  
sq  
m² or m2  
std.  
std.  
stiff.  
str.  
st.  
stgr.  
struc.  
e  
sym.

tan.  
T  
Ts  
TBM  
i.e.  
thd.  
Δ  
T.  
typ.

vph  
VPI  
whs.  
W

NATIONAL BOUNDARY  
STATE BOUNDARY  
COUNTY BOUNDARY  
CITY BOUNDARY  
TOWNSHIP or RANGE LINE  
SECTION LINE  
1/4 SECTION LINE  
1/16 SECTION LINE

NATIONAL PARK or FOREST BOUNDARY

PROPERTY LINE

RIGHT-OF-WAY LINE

RIGHT-OF-WAY LINE  
with MONUMENT

EASEMENT (Permanent; Non-Permanent)

SLOPE STAKE  
TOE OF CUT  
TOE OF FILL  
TRANSITION

ROADWAY, EXISTING

RAILROAD  
SINGLE TRACK  
MULTIPLE TRACK

SILT FENCE

TRAIL

INTERMITTENT DRAINAGE  
and SMALL CREEK

LARGE CREEK/RIVER

LAKE, POND or RESERVOIR; MARSHLAND

SPRING

TREELINE; TREE

MATERIAL SOURCE

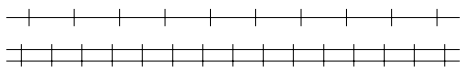
SECTION CORNER

1/4 SECTION CORNER

1/16 SECTION or PROPERTY CORNER

PROPERTY CORNER

PARCEL NUMBER



NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.

2. Dimensions in this plan set are in millimeters unless otherwise noted.

NORTH ARROW



FENCE

GATE with FENCE

CATTLEGUARD

GUARDRAIL

Post mounted, single  
Signs Post mounted, double  
Portable

RETAINING WALL

POWER POLE UTILITIES  
P=power, T=telephone

UNDERGROUND UTILITIES  
G=gas, O=oil, P=power,  
SA= sanitary sewer,  
SS=storm sewer,  
T=telephone, W=water

SUPPORT POLE with ANCHOR

TELEPHONE BOOTH or PEDESTAL

STREET LIGHT

BRIDGE

PIPE CULVERT (arrow shows flow)

PIPE CULVERT with END SECTION

PIPE CULVERT with HEADWALL

BOX CULVERT

CULVERT with DROP INLET

UNDERDRAIN

CONTROL POINT

SURVEY MONUMENT

HUB & TACK

SPOT ELEVATION

COORDINATE GRID TICK

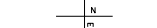
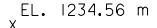
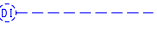
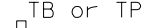
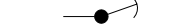
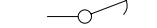
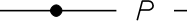
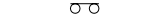
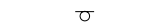
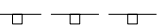
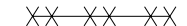
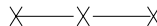
BUILDING

BORING LOCATION

RIPRAP

EXISTING

PROPOSED



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

METRIC DETAIL  
PLAN SYMBOLS  
and  
ABBREVIATIONS

DETAIL APPROVED FOR USE 11/2001

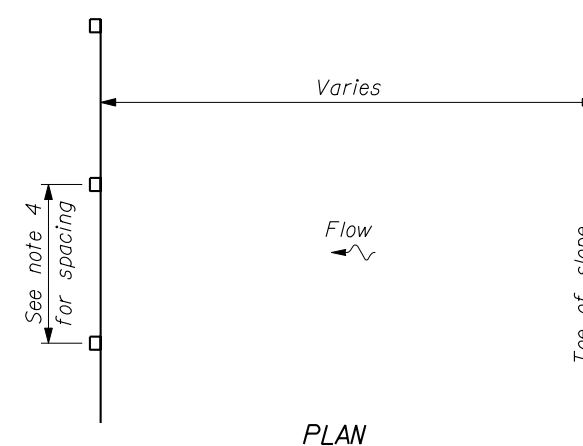
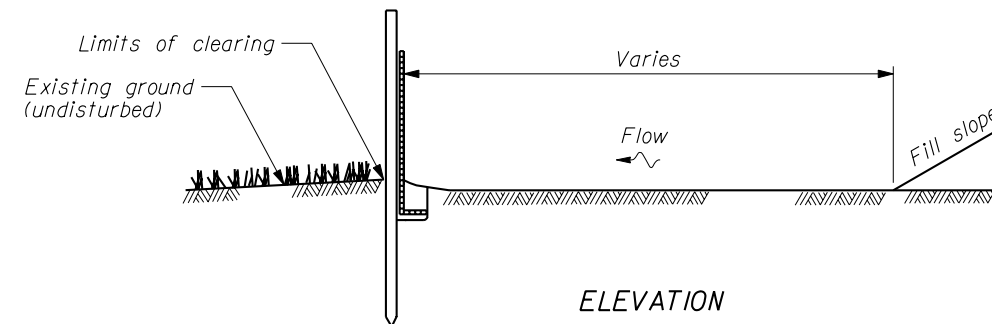
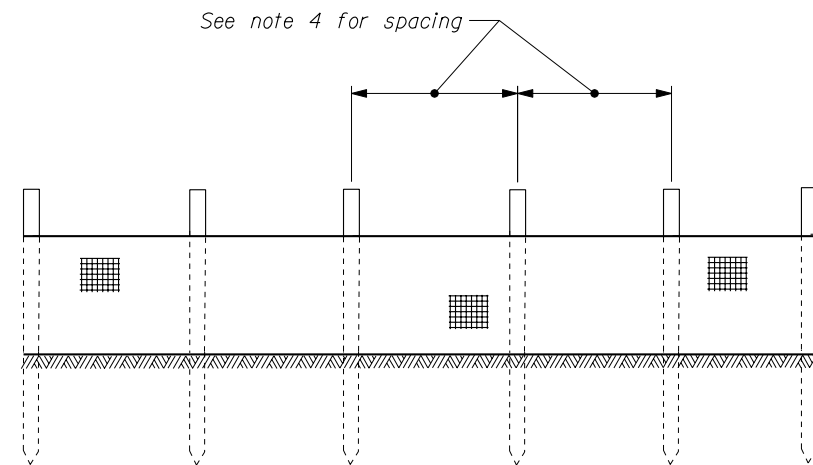
REVISED:

DETAIL

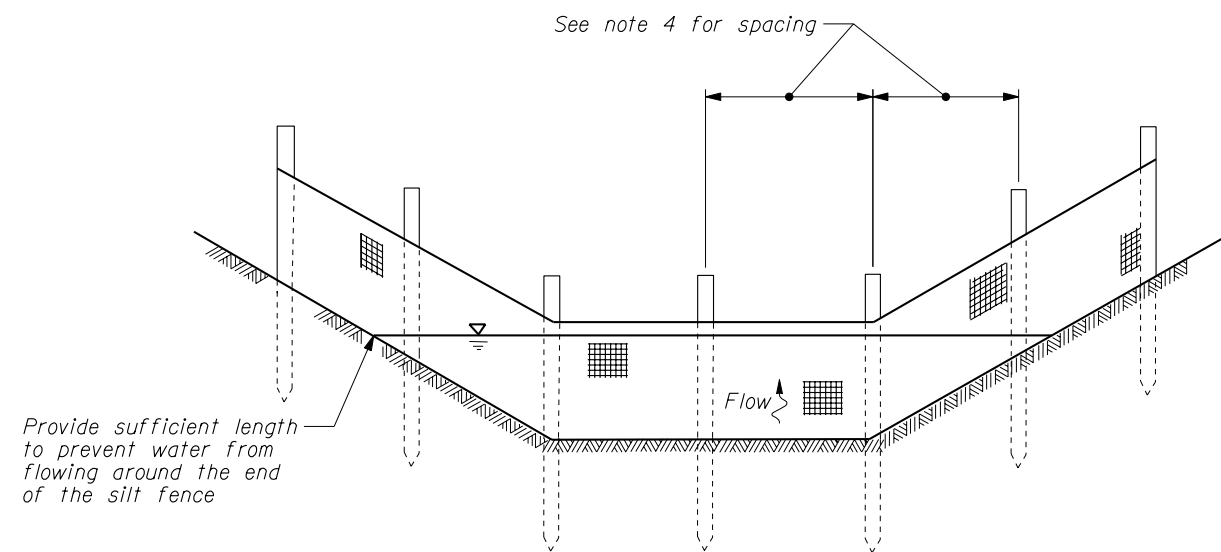
WM101-1

# NOTE:

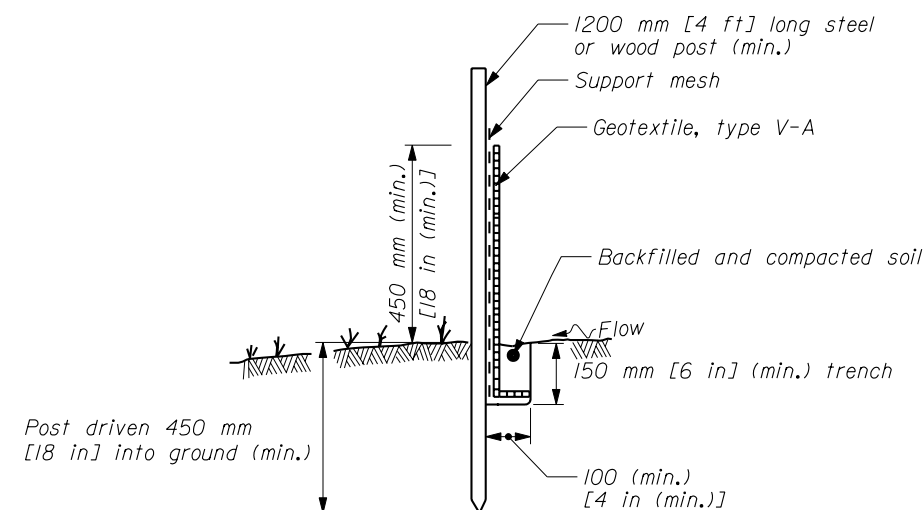
1. Use drainage ditch installation for low flow conditions only when specified on Erosion Control Plan.
2. Alternate preassembled silt fence options (geotextile, type V-B) will be allowed as long as specified dimensions are satisfied. Follow manufacturer's recommendations for installation procedures. All types must ensure silt fence remains attached to, and does not slide down, supporting posts.
3. Install silt fence along ground contours. Curve ends of silt fence upgrade to prevent water from running around the ends.
4. 3.0 m [10 ft] (max.) spacing with fence support.  
1.8 m [6 ft] (max.) spacing without fence support.



SILT FENCE INSTALLATION AT TOE OF FILL



SILT FENCE INSTALLATION IN A DRAINAGE DITCH  
(See note 1)



POST AND GEOTEXTILE INSTALLATION DETAIL

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

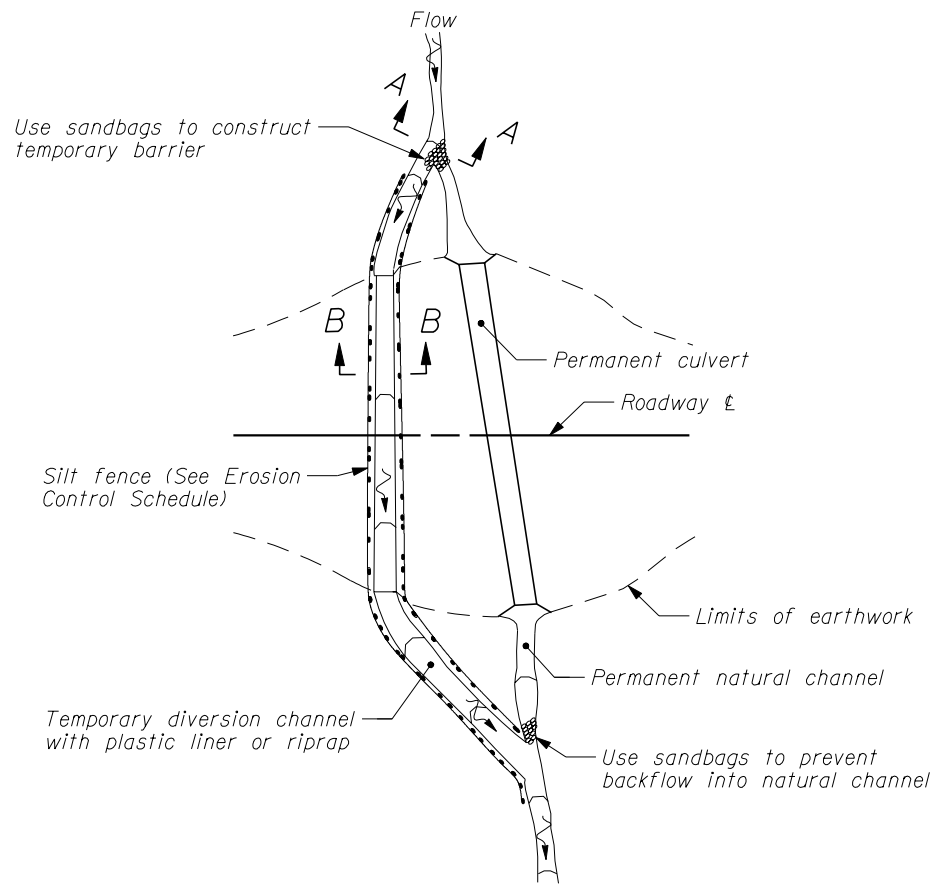
DUAL UNIT DETAIL

SILT FENCE

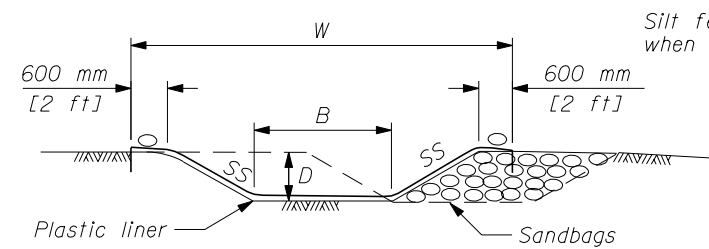
DETAIL APPROVED FOR USE 4/2002

REVISED:

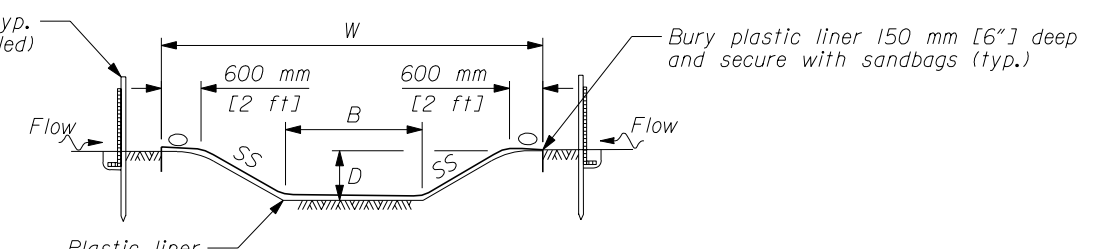
DETAIL  
W157-1



PLAN  
DIVERSION CHANNEL

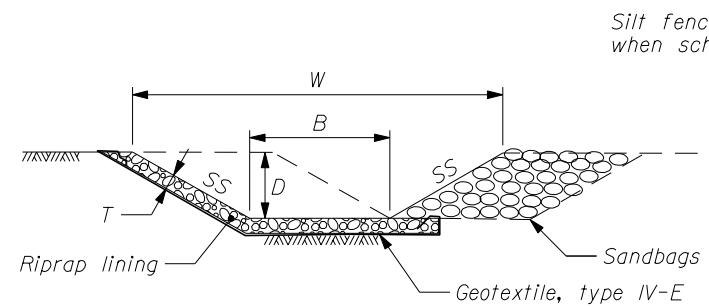


SECTION A-A

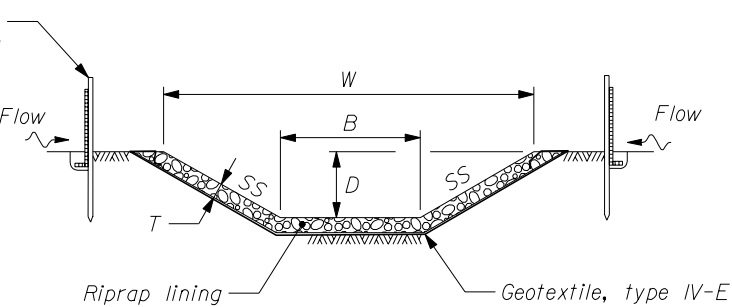


SECTION B-B

PLASTIC LINED DIVERSION CHANNEL

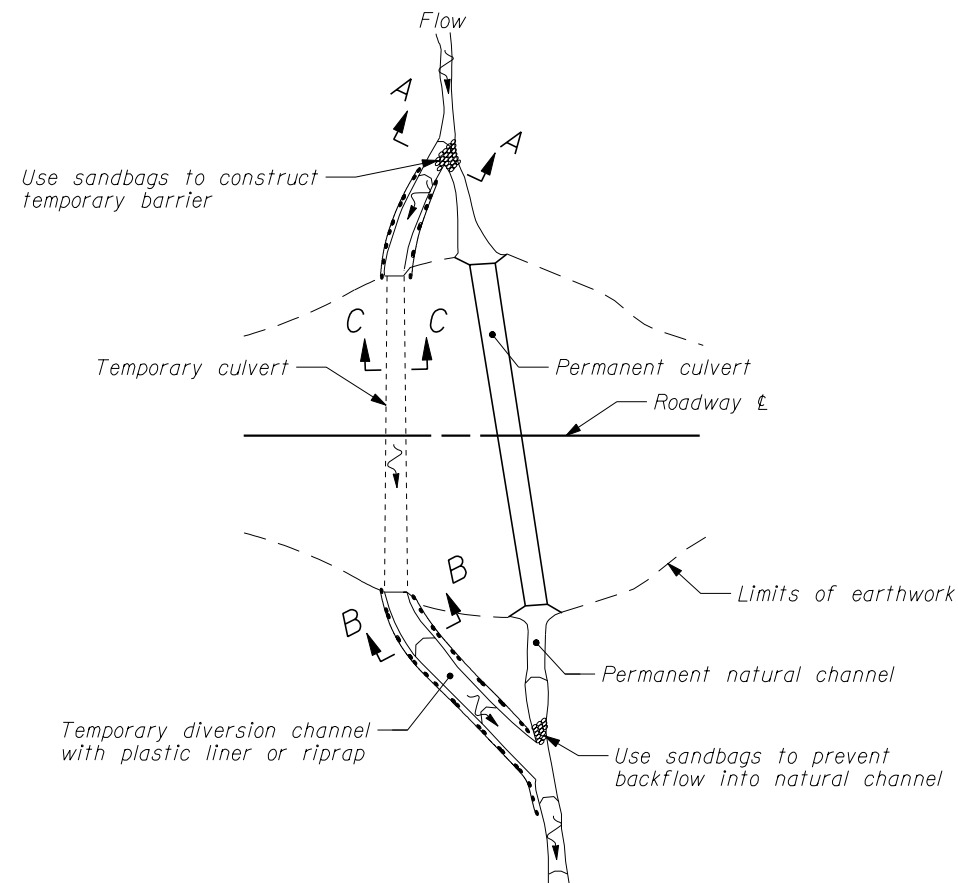


SECTION A-A

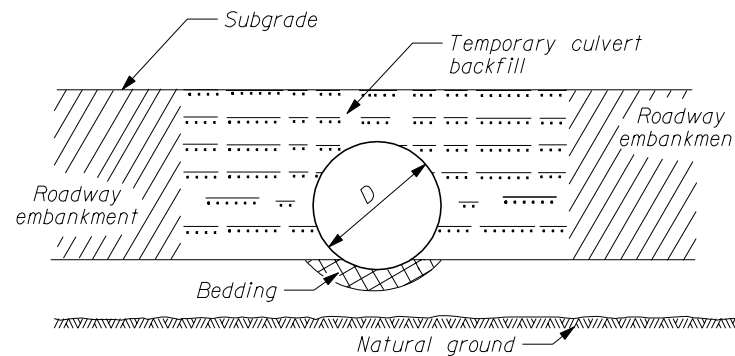


SECTION B-B

RIPRAP LINED DIVERSION CHANNEL



PLAN  
TEMPORARY CULVERT DIVERSION



SECTION C-C  
TEMPORARY CULVERT

NOTE:

1. See Erosion Control Section for temporary culvert diameter, riprap class, channel dimensions and quantities.
2. Use plastic liner or riprap along the entire length and width of the temporary diversion channel.
3. Construct channel at a minimum grade of 0.5 percent.
4. Do not construct with longitudinal joints if using a plastic liner. Bury the upstream edge of the liner a minimum of 150 mm [6"] deep and secure with riprap or sandbags.
5. Compact temporary culvert backfill using one of the methods listed in specification 204.11(a).

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

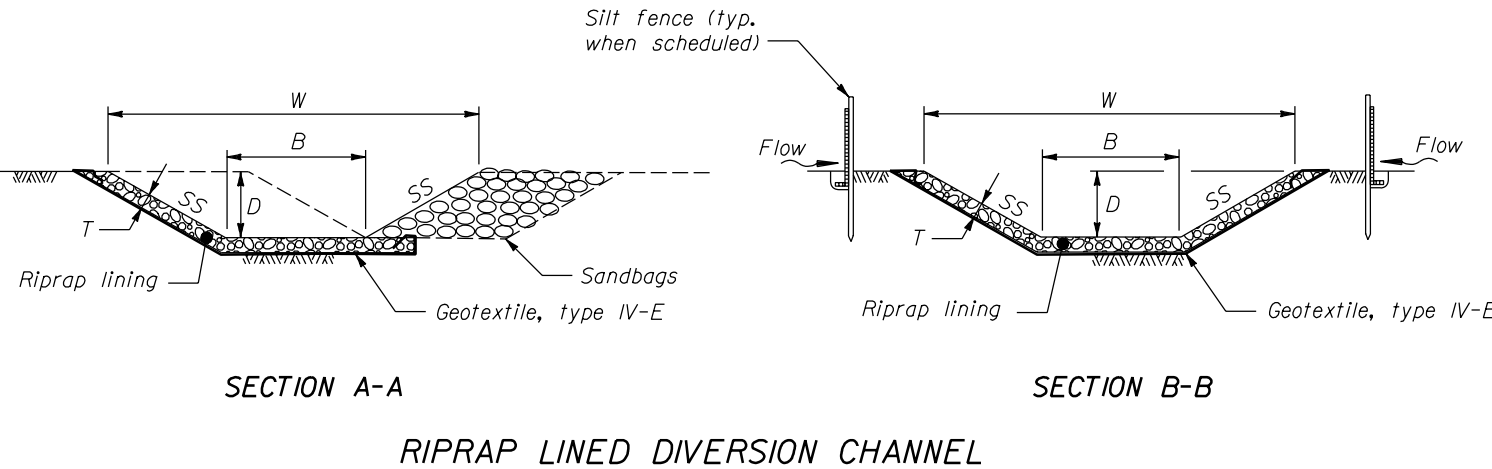
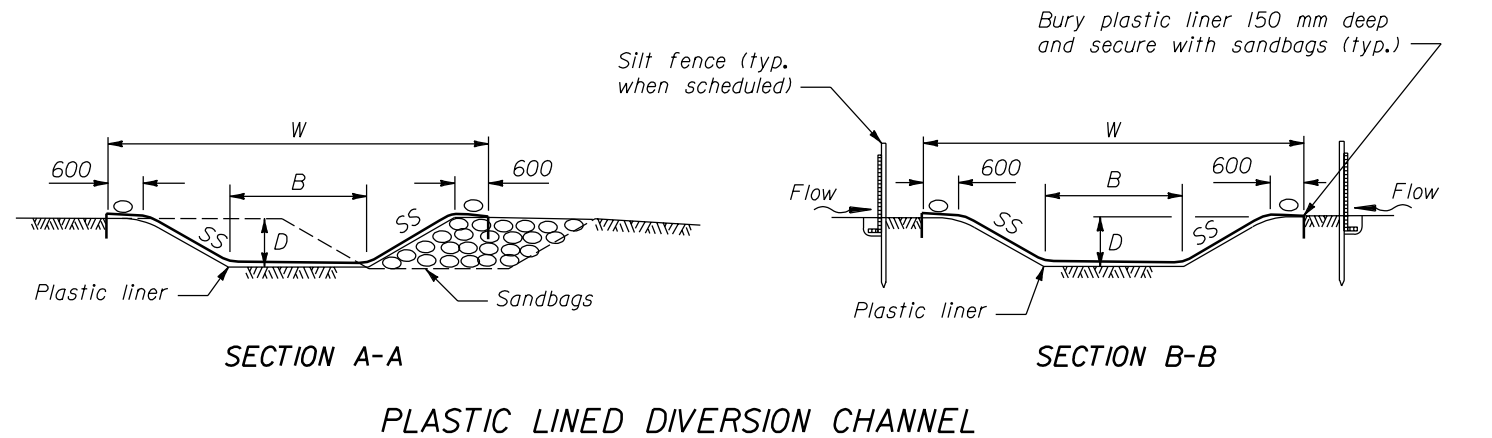
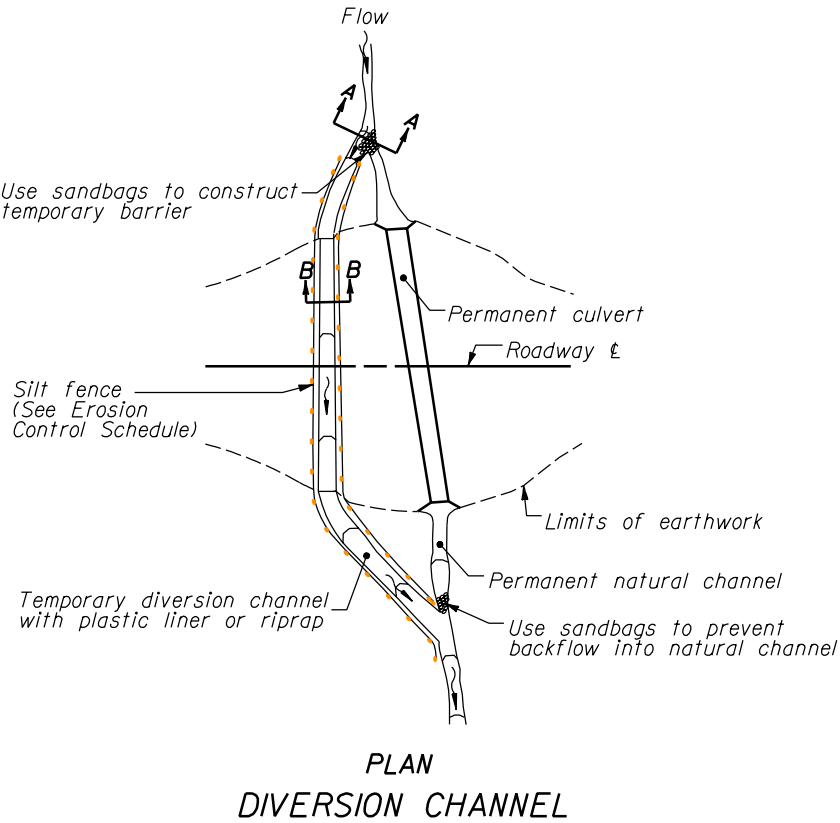
DUAL UNIT DETAIL

TEMPORARY  
DIVERSION CHANNELS

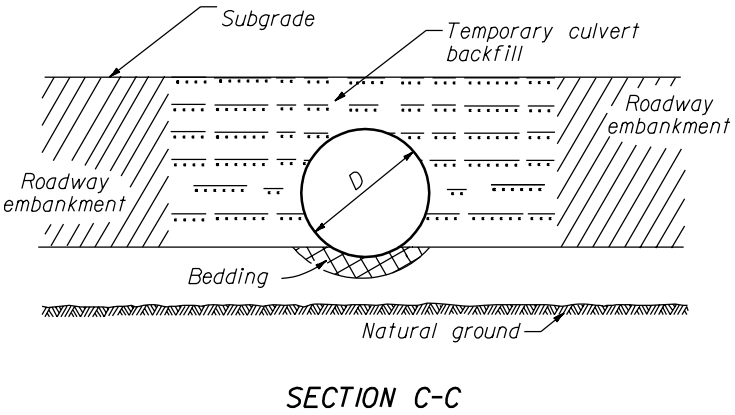
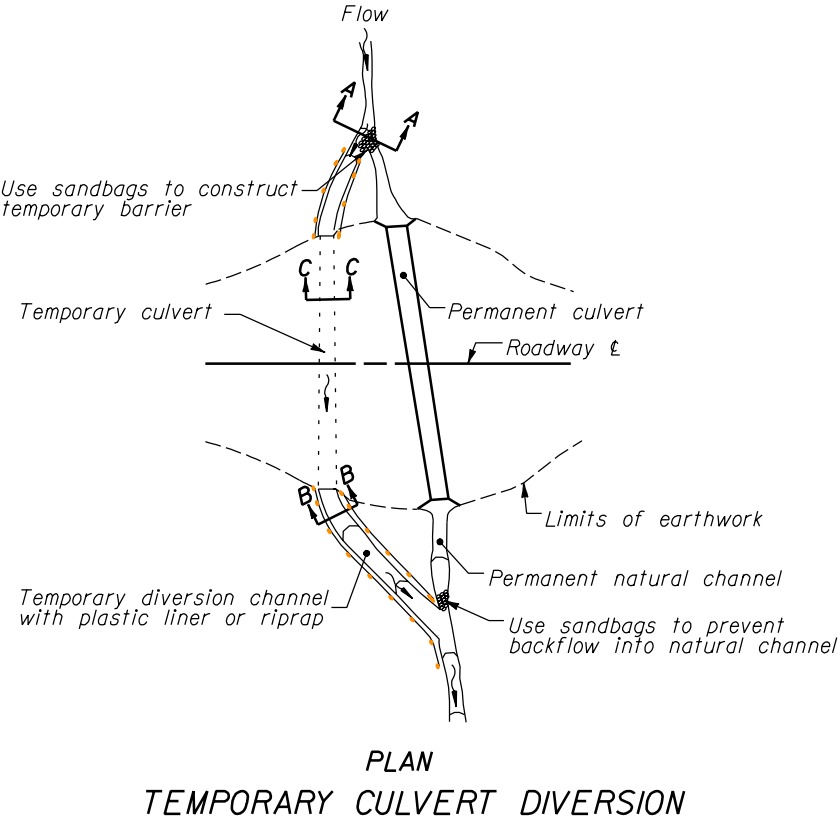
DETAIL APPROVED FOR USE 3/1999  
REVISED: 5/2000 12/2002

DETAIL  
WI57-5

NO SCALE



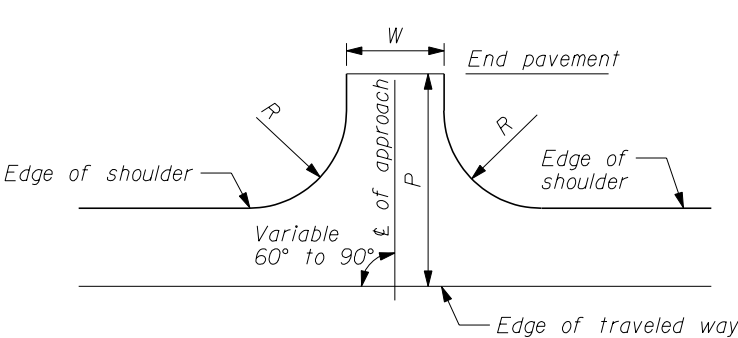
- NOTE:**
1. Dimensions not labeled are in millimeters.
  2. See Erosion Control Section for temporary culvert diameter, riprap class, channel dimensions and quantities.
  3. Use plastic liner or riprap along the entire length and width of the temporary diversion channel.
  4. Construct channel at a minimum grade of 0.5 percent.
  5. Do not construct with longitudinal joints if using a plastic liner. Bury the upstream edge of the liner a minimum of 150 mm deep and secure with riprap or sandbags.
  6. Compact temporary culvert backfill using one of the methods listed in specification 204.11(a).



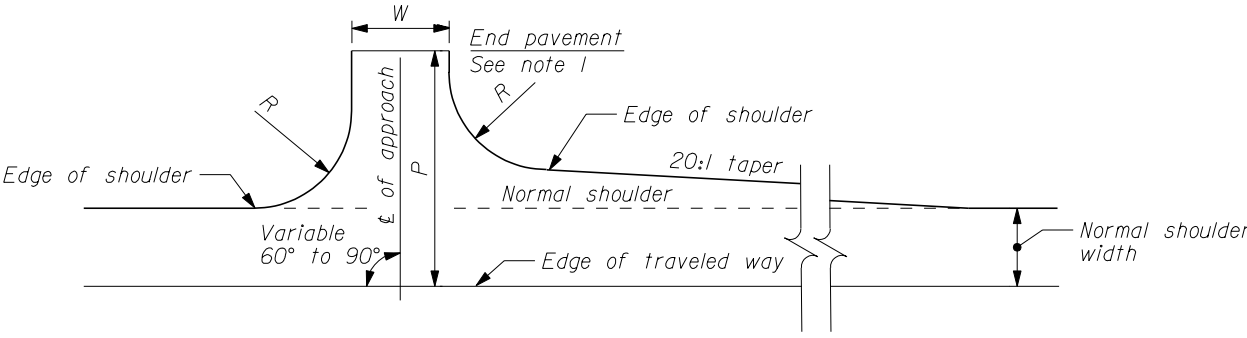
NO SCALE

|   |                   |
|---|-------------------|
| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>WESTERN FEDERAL LANDS HIGHWAY DIVISION |                   |
| METRIC DETAIL   |                   |
| TEMPORARY<br>DIVERSION CHANNELS   |                   |
| DETAIL APPROVED FOR USE 3/1999<br>REVISED: 5/2000   | DETAIL<br>WM157-5 |

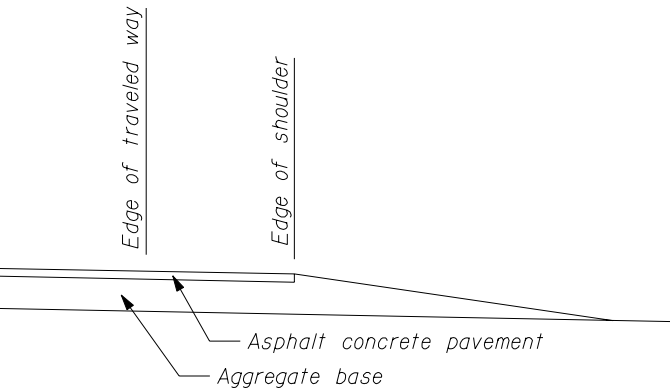
- NOTE:
1. Finish Type 3 approaches to public roads (county, state and municipalities) and public or private roads used for commercial purposes with the same pavement structure as shown for the adjacent roadbed.
  2. Finish other approaches with untreated base. Provide a wearing surface of the same treatment as shown for the adjacent roadbed, but limit the depth to 1 1/2" maximum.
  3. Construct side slope ratio and degree of finish of approaches compatible with adjacent roadway construction.



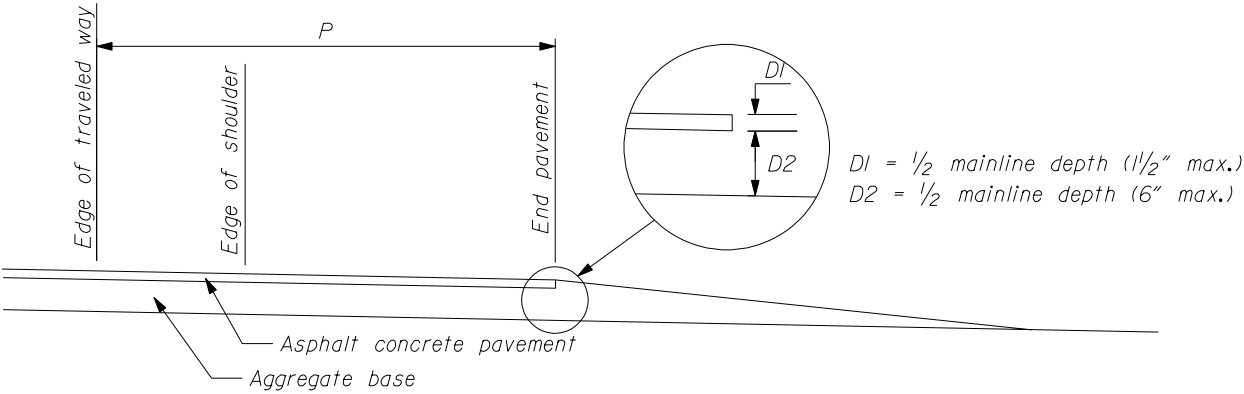
TYPE 1 AND 2



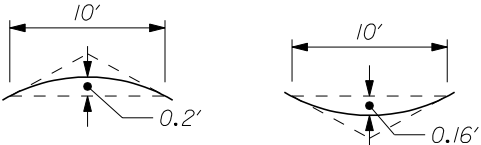
TYPE 3



TYPE 1 APPROACH  
(UNPAVED)

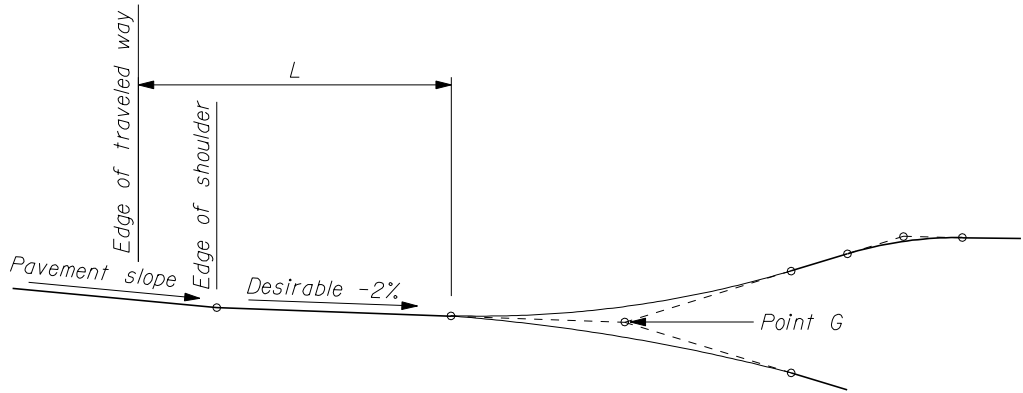


TYPE 2 APPROACHES

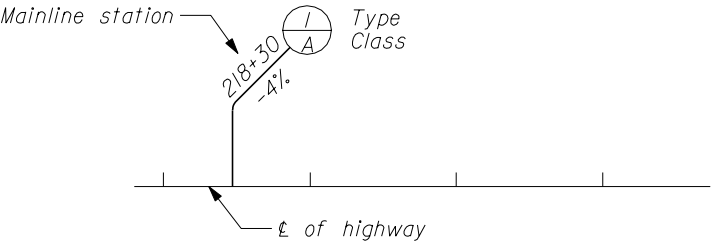


MAXIMUM CREST      MAXIMUM SAG

Where approach grades meet without vertical curves, limit the maximum algebraic difference to 8% on crests and 12% on sags.



APPROACH PROFILE



ROAD APPROACH SYMBOL

| ROAD APPROACHES      |       |                    |    |             |        |
|----------------------|-------|--------------------|----|-------------|--------|
| TYPE                 | CLASS | W                  | R  | L<br>(min.) | P      |
|                      |       | Dimensions in feet |    |             |        |
| Single owner use     |       |                    |    |             |        |
| 1                    | A     | 16                 | 16 | 16          | N/A    |
| 2 or 3               | A     | 16                 | 16 | 16          | 16     |
| 2 or 3               | B     | 20                 | 16 | 16          | 16     |
| Two-way multiple use |       |                    |    |             |        |
| 2 or 3               | C     | 26                 | 16 | to R/W      | to R/W |
| 2 or 3               | D     | 32                 | 30 | to R/W      | to R/W |
| Public road approach |       |                    |    |             |        |
| 3                    | E     | 32                 | 55 | 55          | 55     |

U.S. DEPARTMENT OF TRANSPORTATION  
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WESTERN FEDERAL LANDS HIGHWAY DIVISION

DETAIL

STANDARD OREGON  
ROAD APPROACH

DETAIL APPROVED FOR USE 12/2002

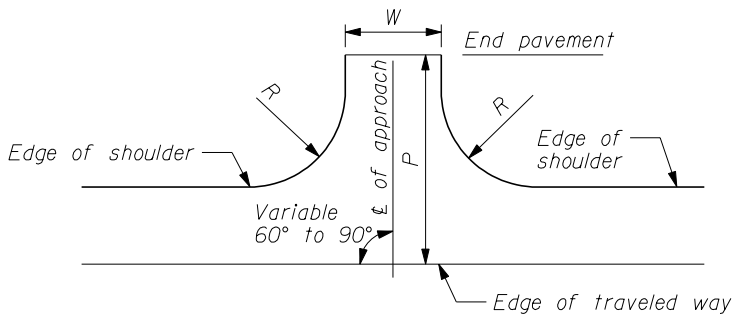
REVISED:

DETAIL  
W200-2

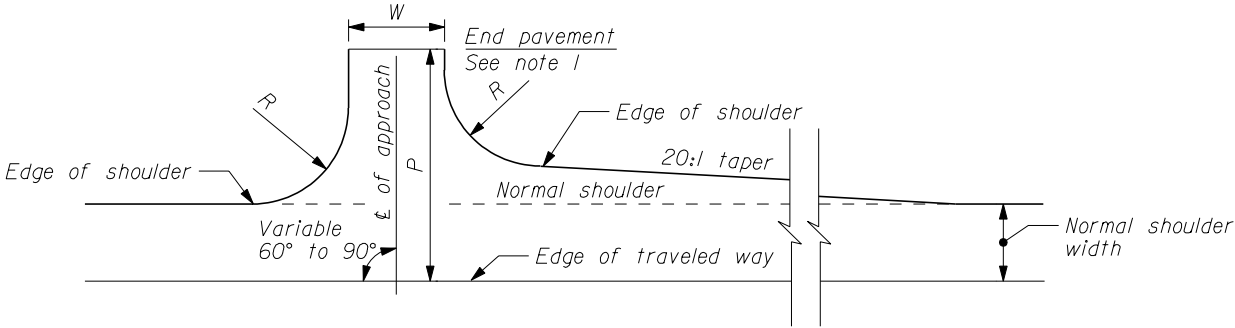
NO SCALE

NOTE:

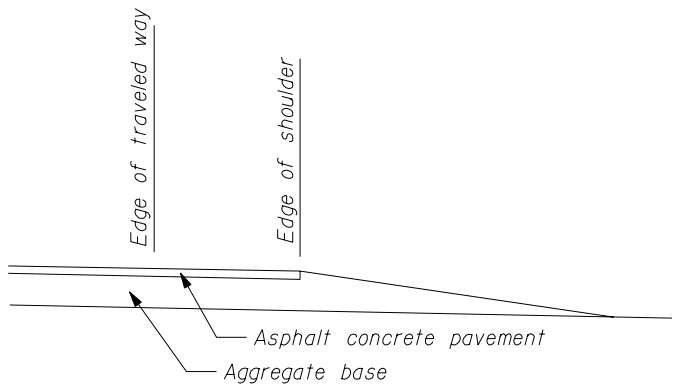
1. Finish Type 3 approaches to public roads (county, state and municipalities) and public or private roads used for commercial purposes with the same pavement structure as shown for the adjacent roadbed.
2. Finish other approaches with untreated base. Provide a wearing surface of the same treatment as shown for the adjacent roadbed, but limit the depth to 40 mm maximum.
3. Construct side slope ratio and degree of finish of approaches compatible with adjacent roadway construction.
4. Dimensions not labeled are in millimeters.



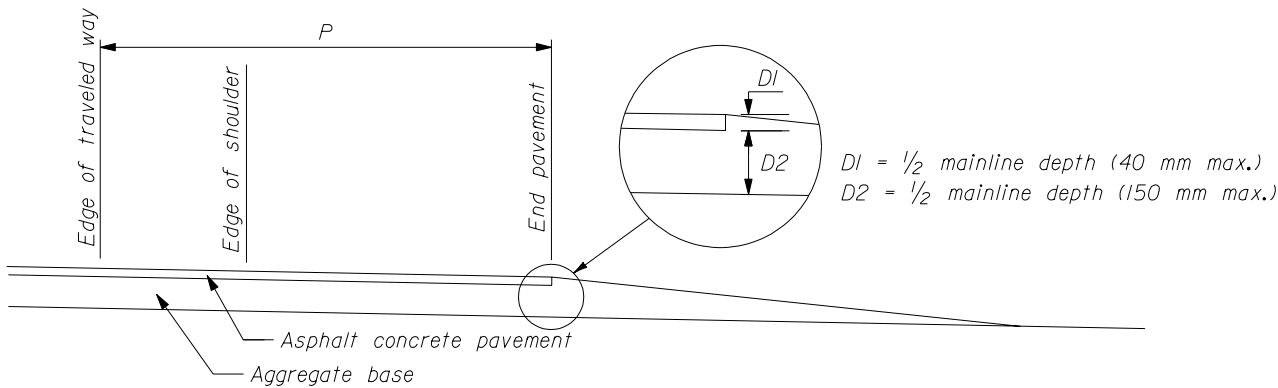
TYPE 1 AND 2



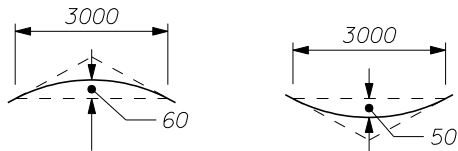
TYPE 3



TYPE 1 APPROACH  
(UNPAVED)

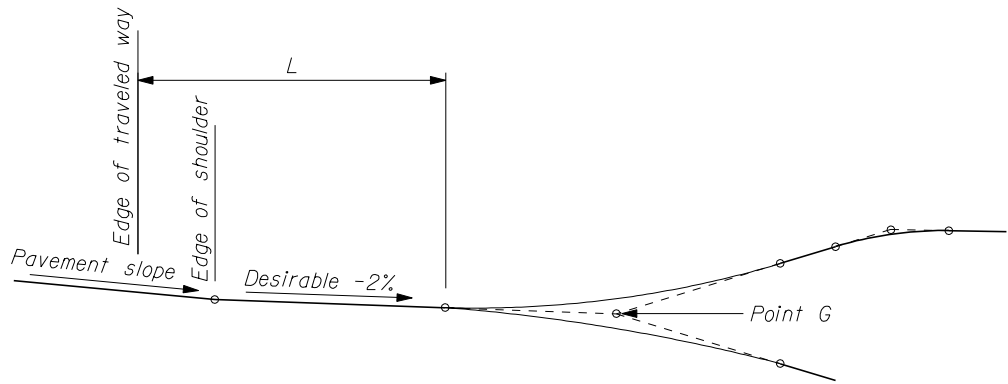


TYPE 2 APPROACHES

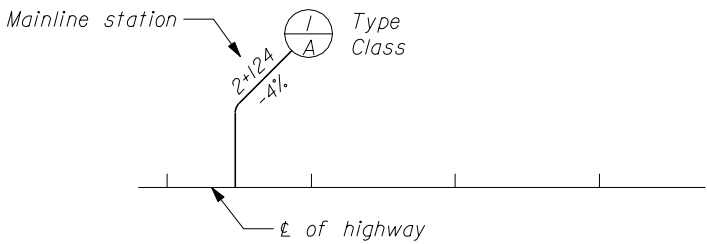


MAXIMUM CREST      MAXIMUM SAG

Where approach grades meet without vertical curves, limit the maximum algebraic difference to 8% on crests and 12% on sags.



APPROACH PROFILE



ROAD APPROACH SYMBOL

| ROAD APPROACHES      |       |                      |      |             |        |
|----------------------|-------|----------------------|------|-------------|--------|
| TYPE                 | CLASS | W                    | R    | L<br>(min.) | P      |
|                      |       | Dimensions in meters |      |             |        |
| Single owner use     |       |                      |      |             |        |
| 1                    | A     | 4.8                  | 4.8  | 4.8         | N/A    |
| 2 or 3               | A     | 4.8                  | 4.8  | 4.8         | 4.8    |
| 2 or 3               | B     | 6.0                  | 4.8  | 4.8         | 4.8    |
| Two-way multiple use |       |                      |      |             |        |
| 2 or 3               | C     | 7.8                  | 4.8  | to R/W      | to R/W |
| 2 or 3               | D     | 9.6                  | 9.0  | to R/W      | to R/W |
| Public road approach |       |                      |      |             |        |
| 3                    | E     | 9.6                  | 16.5 | 16.5        | 16.5   |

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WESTERN FEDERAL LANDS HIGHWAY DIVISION

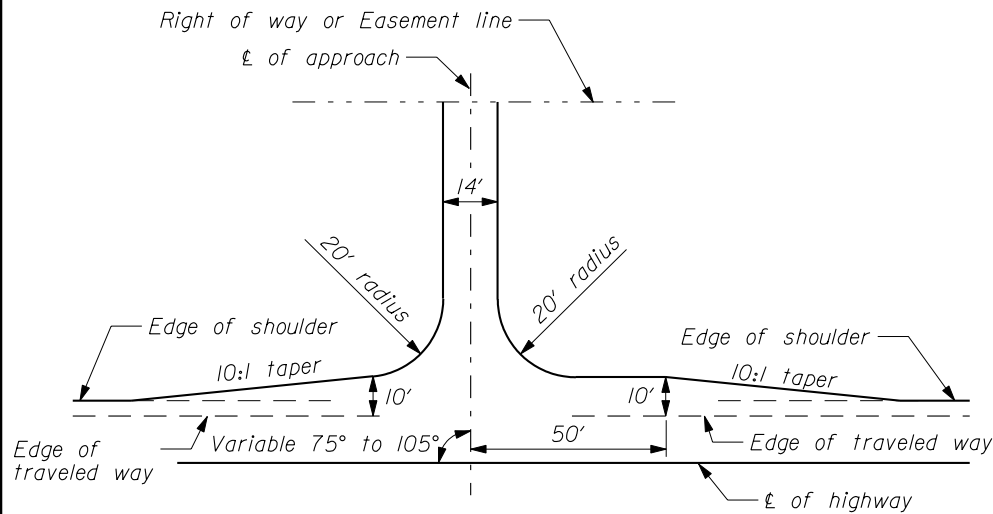
METRIC DETAIL

STANDARD OREGON  
ROAD APPROACH

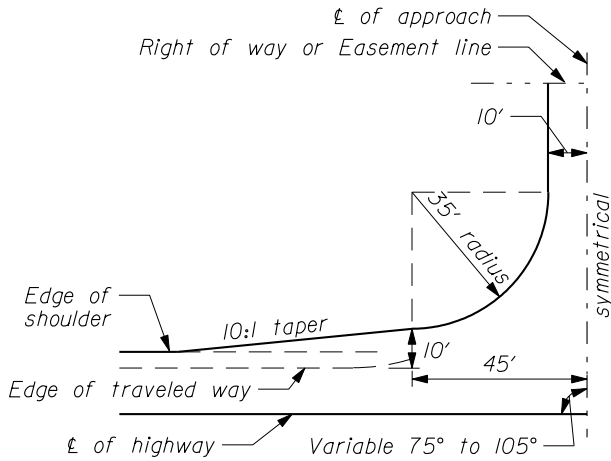
DETAIL APPROVED FOR USE 3/1996  
REVISED: 12/2000 9/2001 12/2002

DETAIL  
WM200-2

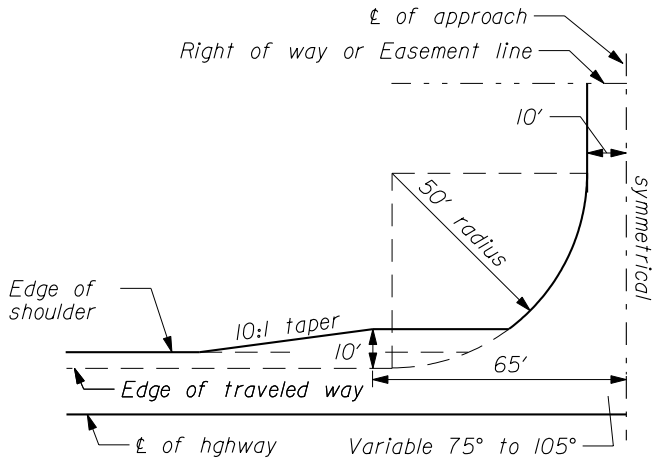
NO SCALE



PLAN OF TYPE A APPROACH



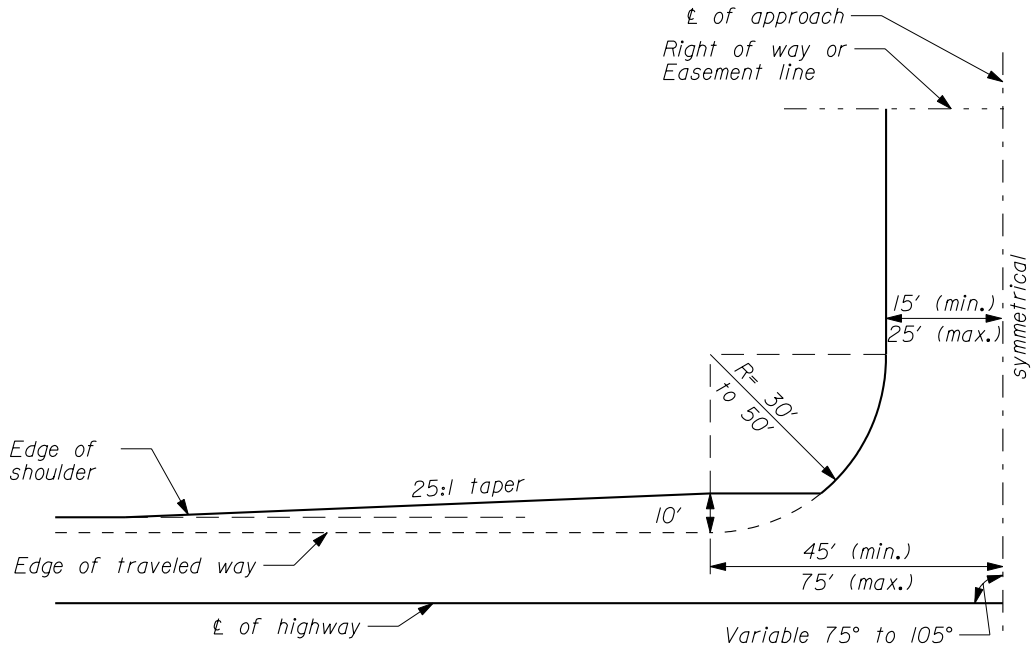
PLAN OF TYPE B APPROACH



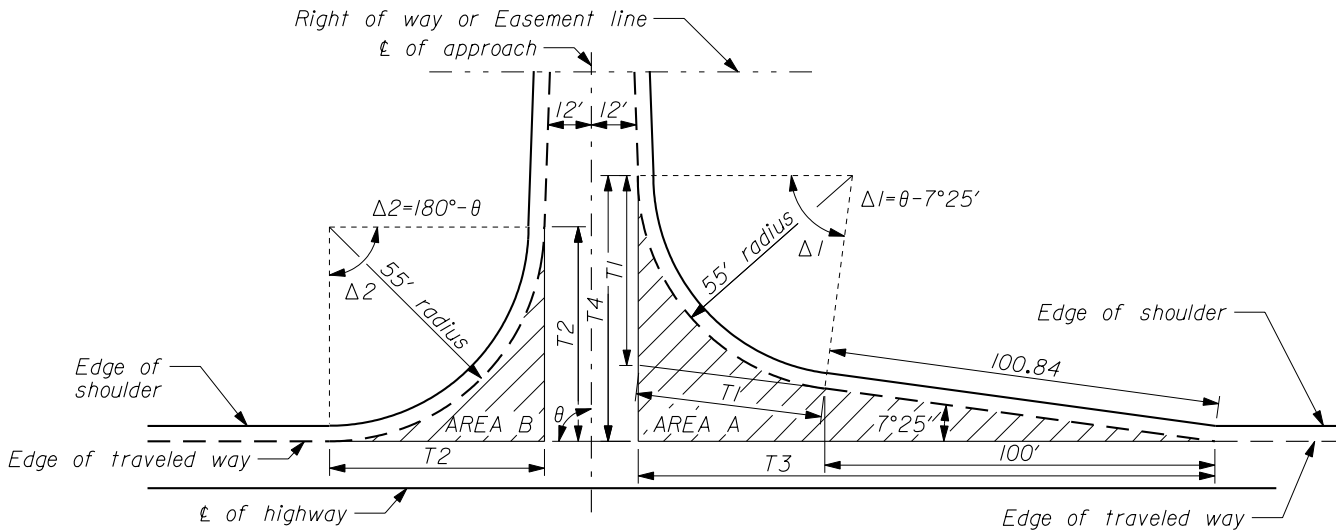
PLAN OF TYPE C APPROACH

- NOTE:**
1. Continue approach radius as required if connection to existing alignment of new approach is at an angle.
  2. Finish Type D and M approaches with the same treatment as shown for the adjacent roadbed.
  3. Finish other approaches with the same treatment as shown for the adjacent roadbed, except the surface course shall not exceed 1½ inches in depth.
  4. Extend paving to the right-of-way or easement line unless otherwise shown on the plans.
  5. Construct side slope ratios and finish approaches compatible with the adjacent roadway construction.

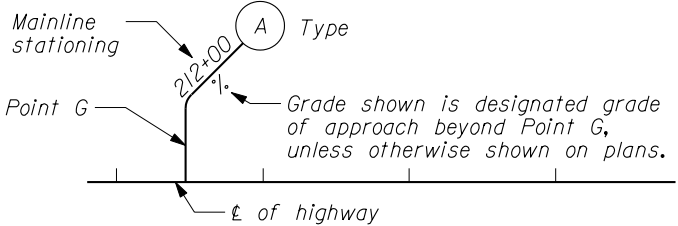
| TYPE M INTERSECTION DATA |        |      |          |          |          |          |                |                |
|--------------------------|--------|------|----------|----------|----------|----------|----------------|----------------|
| SKW<br>θ                 | Δ1     | Δ2   | T1<br>ft | T2<br>ft | T3<br>ft | T4<br>ft | Area A<br>sqyd | Area B<br>sqyd |
| 75°                      | 67°35" | 105° | 36.81    | 71.68    | 131.74   | 55.20    | 157            | 130            |
| 76°                      | 68°35" | 104° | 37.51    | 70.40    | 132.74   | 55.91    | 160            | 125            |
| 77°                      | 69°35" | 103° | 38.21    | 69.14    | 133.75   | 56.64    | 163            | 120            |
| 78°                      | 70°35" | 102° | 38.93    | 67.92    | 134.77   | 57.38    | 166            | 116            |
| 79°                      | 71°35" | 101° | 39.66    | 66.72    | 135.80   | 58.13    | 169            | 111            |
| 80°                      | 72°35" | 100° | 40.39    | 65.55    | 136.84   | 58.90    | 173            | 107            |
| 81°                      | 73°35" | 99°  | 41.13    | 64.40    | 137.89   | 59.69    | 176            | 103            |
| 82°                      | 74°35" | 98°  | 41.89    | 63.27    | 138.95   | 60.49    | 179            | 99             |
| 83°                      | 75°35" | 97°  | 42.65    | 62.17    | 140.02   | 61.31    | 183            | 95             |
| 84°                      | 76°35" | 96°  | 43.42    | 61.08    | 141.10   | 62.15    | 187            | 92             |
| 85°                      | 77°35" | 95°  | 44.21    | 60.02    | 142.20   | 63.00    | 191            | 88             |
| 86°                      | 78°35" | 94°  | 45.00    | 58.98    | 143.31   | 63.88    | 194            | 85             |
| 87°                      | 79°35" | 93°  | 45.81    | 57.96    | 144.44   | 64.77    | 198            | 81             |
| 88°                      | 80°35" | 92°  | 46.63    | 56.95    | 145.57   | 65.68    | 203            | 78             |
| 89°                      | 81°35" | 91°  | 47.46    | 55.97    | 146.73   | 66.61    | 207            | 75             |
| 90°                      | 82°35" | 90°  | 48.30    | 55.00    | 147.90   | 67.56    | 211            | 72             |
| 91°                      | 83°35" | 89°  | 49.16    | 54.05    | 149.09   | 68.53    | 216            | 69             |
| 92°                      | 84°35" | 88°  | 50.03    | 53.11    | 150.29   | 69.52    | 220            | 66             |
| 93°                      | 85°35" | 87°  | 50.92    | 52.19    | 151.52   | 70.53    | 225            | 64             |
| 94°                      | 86°35" | 86°  | 51.81    | 51.29    | 152.76   | 71.57    | 230            | 61             |
| 95°                      | 87°35" | 85°  | 52.73    | 50.40    | 154.02   | 72.63    | 235            | 59             |
| 96°                      | 88°35" | 84°  | 53.66    | 49.52    | 155.30   | 73.71    | 240            | 56             |
| 97°                      | 89°35" | 83°  | 54.60    | 48.66    | 156.61   | 74.82    | 245            | 54             |
| 98°                      | 90°35" | 82°  | 55.56    | 47.81    | 157.94   | 75.95    | 251            | 52             |
| 99°                      | 91°35" | 81°  | 56.54    | 46.97    | 159.29   | 77.11    | 257            | 49             |
| 100°                     | 92°35" | 80°  | 57.54    | 46.15    | 160.66   | 78.30    | 263            | 47             |
| 101°                     | 93°35" | 79°  | 58.55    | 45.34    | 162.06   | 79.51    | 269            | 45             |
| 102°                     | 94°35" | 78°  | 59.59    | 44.54    | 163.49   | 80.76    | 275            | 43             |
| 103°                     | 95°35" | 77°  | 60.64    | 43.75    | 164.94   | 82.03    | 281            | 42             |
| 104°                     | 96°35" | 76°  | 61.71    | 42.97    | 166.43   | 83.34    | 288            | 40             |
| 105°                     | 97°35" | 75°  | 62.81    | 42.20    | 167.94   | 84.68    | 295            | 38             |



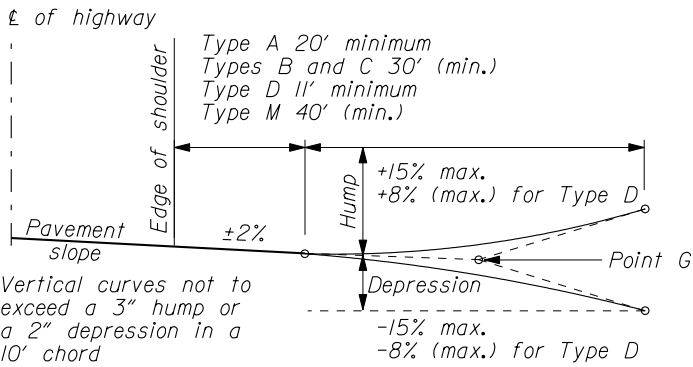
PLAN OF TYPE D APPROACH



PLAN OF TYPE M APPROACH

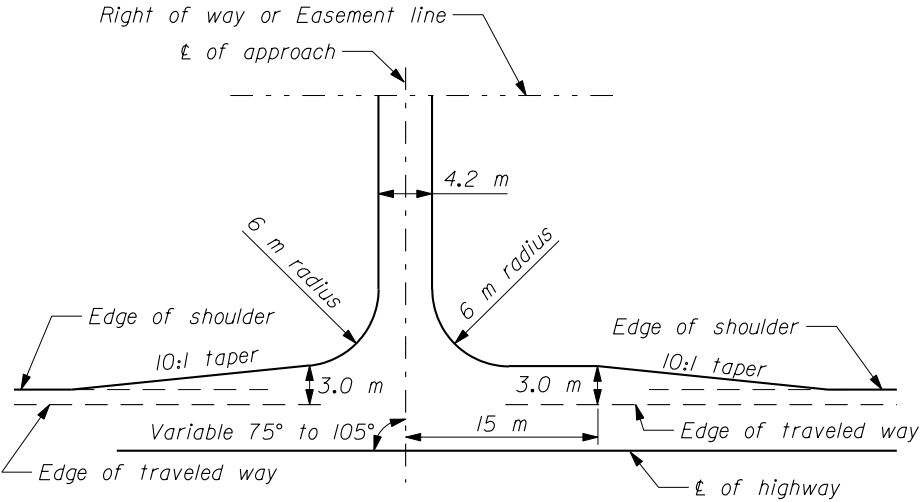


ROAD APPROACH LOCATIONS ON PLAN SHEETS

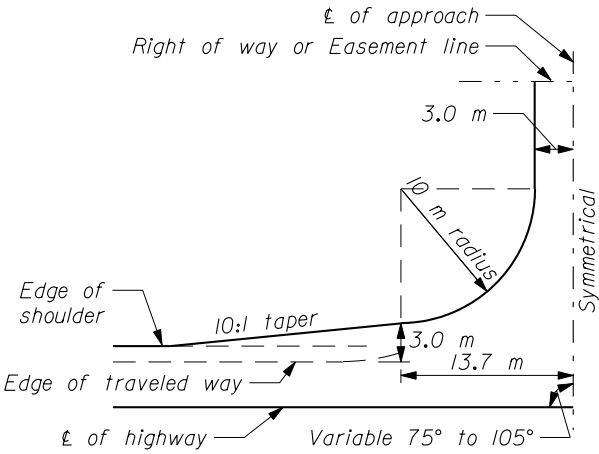


PROFILE OF TYPE A, B, C, D, M APPROACHES

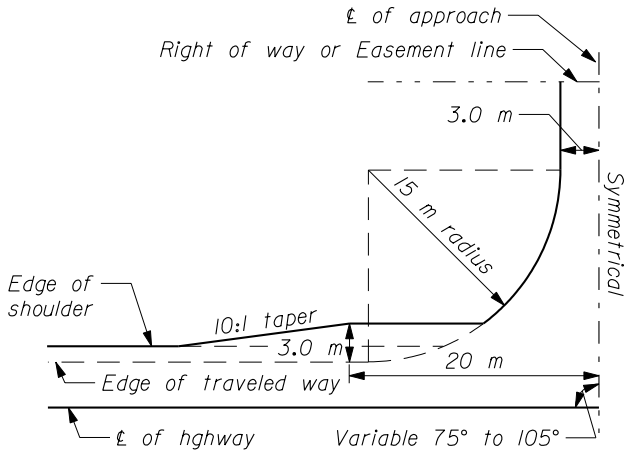
NO SCALE



PLAN OF TYPE A APPROACH



PLAN OF TYPE B APPROACH

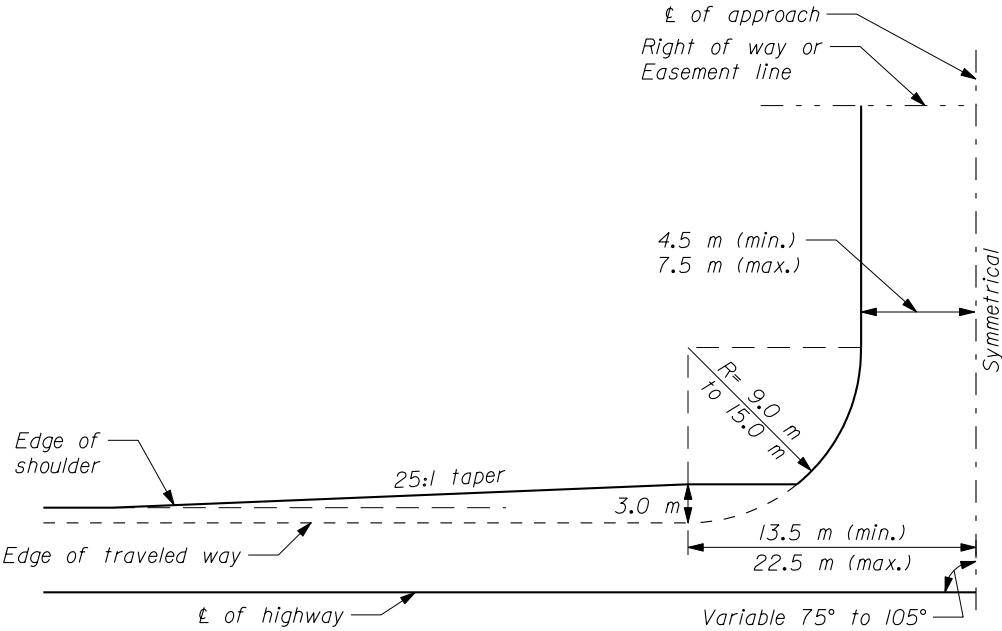


PLAN OF TYPE C APPROACH

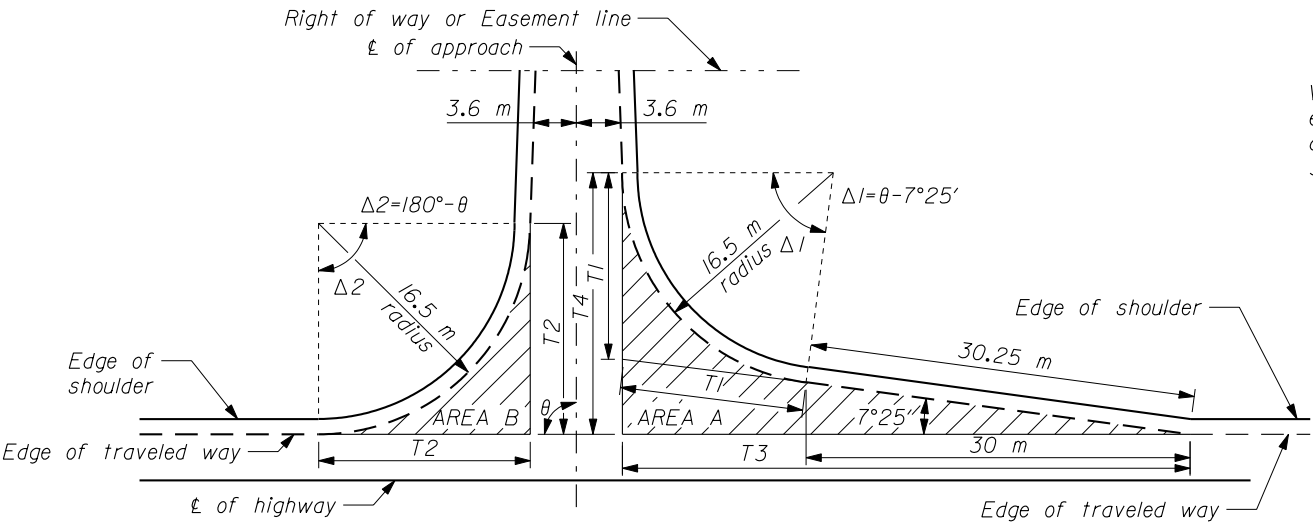
NOTE:

1. Continue approach radius as required if connection to existing alignment of new approach is at an angle.
2. Finish Type D and M approaches with the same treatment as shown for the adjacent roadbed.
3. Finish other approaches with the same treatment as shown for the adjacent roadbed, except the surface course shall not exceed 40 mm in depth.
4. Extend paving to the right-of-way or easement line unless otherwise shown on the plans.
5. Construct side slope ratios and finish approaches compatible with the adjacent roadway construction.
6. Dimensions not labeled are in millimeters.

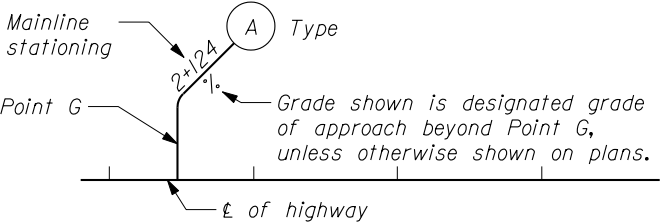
| TYPE M INTERSECTION DATA |            |            |         |         |         |         |                          |                          |
|--------------------------|------------|------------|---------|---------|---------|---------|--------------------------|--------------------------|
| SKREW<br>$\theta$        | $\Delta 1$ | $\Delta 2$ | T1<br>m | T2<br>m | T3<br>m | T4<br>m | Area A<br>m <sup>2</sup> | Area B<br>m <sup>2</sup> |
| 75°                      | 67°35"     | 105°       | 11.04   | 21.50   | 39.52   | 16.56   | 127                      | 105                      |
| 76°                      | 68°35"     | 104°       | 11.25   | 21.12   | 39.82   | 16.77   | 129                      | 101                      |
| 77°                      | 69°35"     | 103°       | 11.46   | 20.74   | 40.13   | 16.99   | 132                      | 98                       |
| 78°                      | 70°35"     | 102°       | 11.68   | 20.38   | 40.43   | 17.21   | 134                      | 94                       |
| 79°                      | 71°35"     | 101°       | 11.90   | 20.02   | 40.74   | 17.44   | 137                      | 90                       |
| 80°                      | 72°35"     | 100°       | 12.12   | 19.66   | 41.05   | 17.67   | 140                      | 87                       |
| 81°                      | 73°35"     | 99°        | 12.34   | 19.32   | 41.37   | 17.91   | 143                      | 84                       |
| 82°                      | 74°35"     | 98°        | 12.57   | 18.98   | 41.68   | 18.15   | 145                      | 80                       |
| 83°                      | 75°35"     | 97°        | 12.79   | 18.65   | 42.01   | 18.39   | 148                      | 77                       |
| 84°                      | 76°35"     | 96°        | 13.03   | 18.33   | 42.33   | 18.64   | 151                      | 74                       |
| 85°                      | 77°35"     | 95°        | 13.26   | 18.01   | 42.66   | 18.90   | 154                      | 71                       |
| 86°                      | 78°35"     | 94°        | 13.50   | 17.69   | 42.99   | 19.16   | 157                      | 69                       |
| 87°                      | 79°35"     | 93°        | 13.74   | 17.39   | 43.33   | 19.43   | 161                      | 66                       |
| 88°                      | 80°35"     | 92°        | 13.99   | 17.09   | 43.67   | 19.70   | 164                      | 63                       |
| 89°                      | 81°35"     | 91°        | 14.24   | 16.79   | 44.02   | 19.98   | 168                      | 61                       |
| 90°                      | 82°35"     | 90°        | 14.49   | 16.50   | 44.37   | 20.27   | 171                      | 58                       |
| 91°                      | 83°35"     | 89°        | 14.75   | 16.21   | 44.73   | 20.56   | 175                      | 56                       |
| 92°                      | 84°35"     | 88°        | 15.01   | 15.93   | 45.09   | 20.86   | 178                      | 54                       |
| 93°                      | 85°35"     | 87°        | 15.27   | 15.66   | 45.45   | 21.16   | 182                      | 52                       |
| 94°                      | 86°35"     | 86°        | 15.54   | 15.39   | 45.83   | 21.47   | 186                      | 50                       |
| 95°                      | 87°35"     | 85°        | 15.82   | 15.12   | 46.21   | 21.79   | 190                      | 48                       |
| 96°                      | 88°35"     | 84°        | 16.10   | 14.86   | 46.59   | 22.11   | 195                      | 46                       |
| 97°                      | 89°35"     | 83°        | 16.38   | 14.60   | 46.98   | 22.45   | 199                      | 44                       |
| 98°                      | 90°35"     | 82°        | 16.67   | 14.34   | 47.38   | 22.79   | 203                      | 42                       |
| 99°                      | 91°35"     | 81°        | 16.96   | 14.09   | 47.79   | 23.13   | 208                      | 40                       |
| 100°                     | 92°35"     | 80°        | 17.26   | 13.85   | 48.20   | 23.49   | 213                      | 38                       |
| 101°                     | 93°35"     | 79°        | 17.57   | 13.60   | 48.62   | 23.85   | 218                      | 37                       |
| 102°                     | 94°35"     | 78°        | 17.88   | 13.36   | 49.05   | 24.23   | 223                      | 35                       |
| 103°                     | 95°35"     | 77°        | 18.19   | 13.12   | 49.48   | 24.61   | 228                      | 34                       |
| 104°                     | 96°35"     | 76°        | 18.51   | 12.89   | 49.93   | 25.00   | 233                      | 32                       |
| 105°                     | 97°35"     | 75°        | 18.84   | 12.66   | 50.38   | 25.40   | 239                      | 31                       |



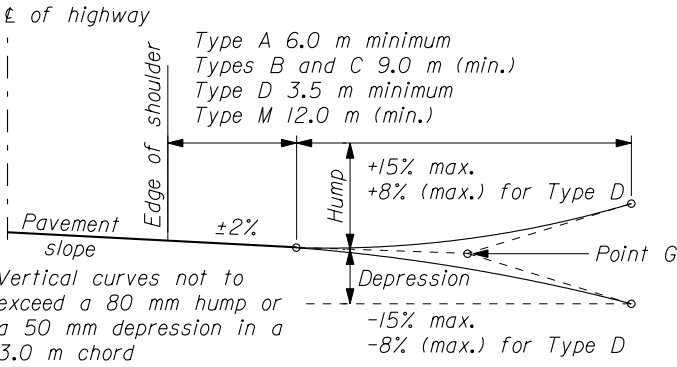
PLAN OF TYPE D APPROACH



PLAN OF TYPE M APPROACH



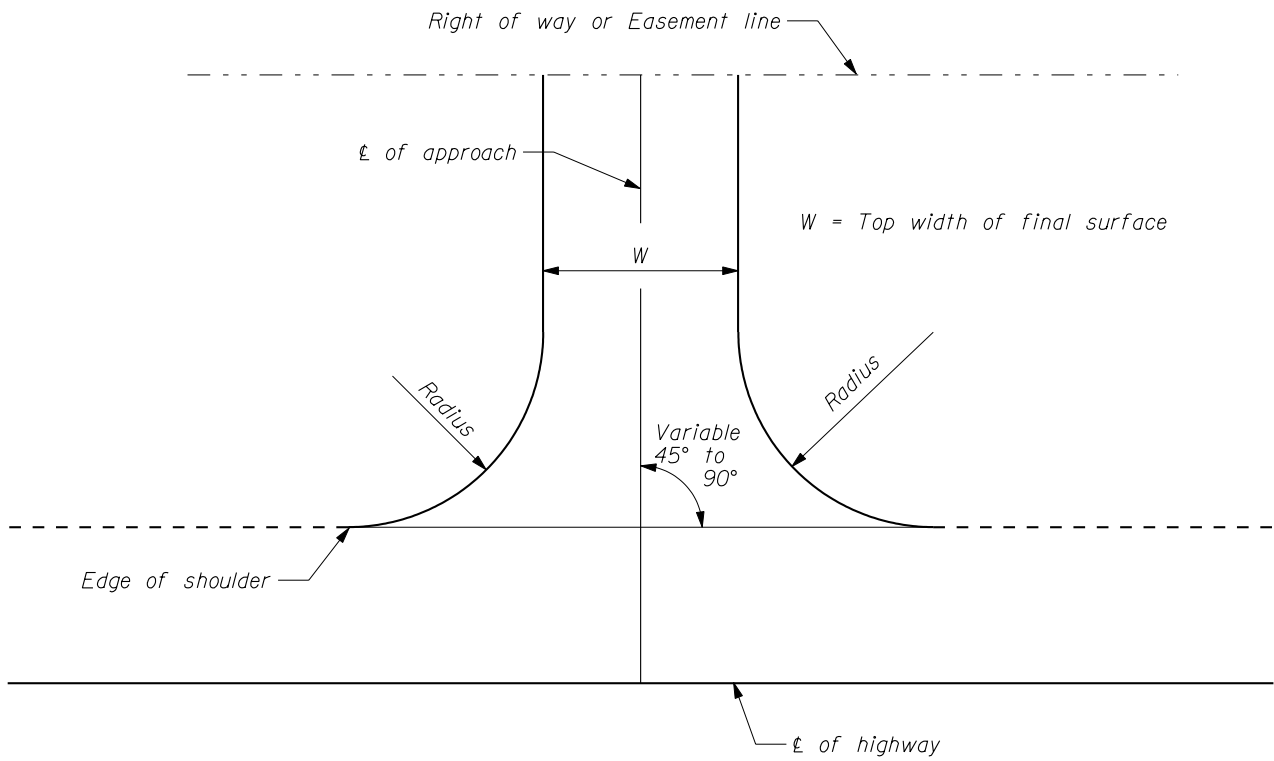
ROAD APPROACH LOCATIONS ON PLAN SHEETS



PROFILE OF TYPE A, B, C, D, M APPROACHES

|   |         |
|---|---------|
| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>WESTERN FEDERAL LANDS HIGHWAY DIVISION |         |
| METRIC DETAIL   |         |
| STANDARD WASHINGTON<br>ROAD APPROACHES  |         |
| DETAIL APPROVED FOR USE 3/1996  | DETAIL  |
| REVISED: 3/1999 12/2000 3/2003 4/2003   | WM200-4 |

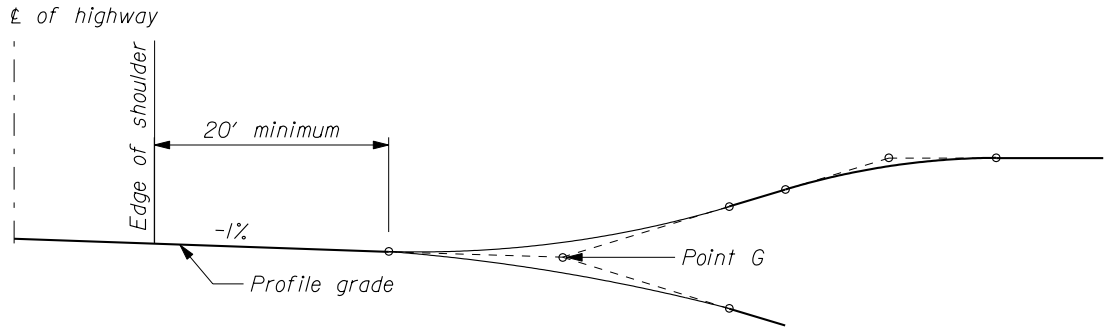
NO SCALE



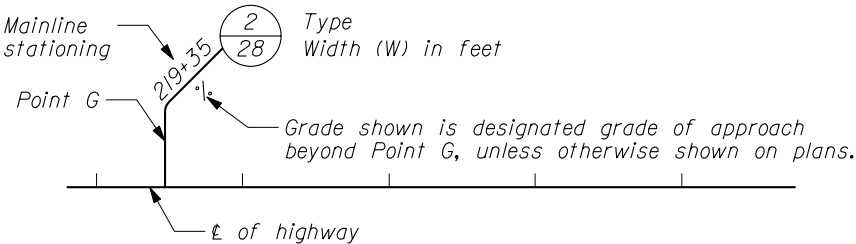
APPROACHES FOR UNCURBED HIGHWAYS  
TYPE 1 AND TYPE 2

NOTE:

1. TYPE 1 APPROACH:  
Top width (W) - 16' minimum  
Radius - 20' minimum
2. TYPE 2 APPROACH:  
Top width (W) - 24' minimum  
Radius - 30' minimum
3. GRADING REQUIREMENTS: Construct sideslopes of finish approaches compatible with adjacent roadway construction.
4. PAVEMENT STRUCTURE REQUIREMENTS: Extend the surface course to the right-of-way or easement line unless otherwise shown on the plans.
5. Finish approaches to public roads used for commercial purposes with same treatment as shown for the adjacent roadbed.
6. Finish other approaches with aggregate base. Provide a surface course of the same treatment as shown for the adjacent roadbed, but do not exceed 1 1/2" in depth.



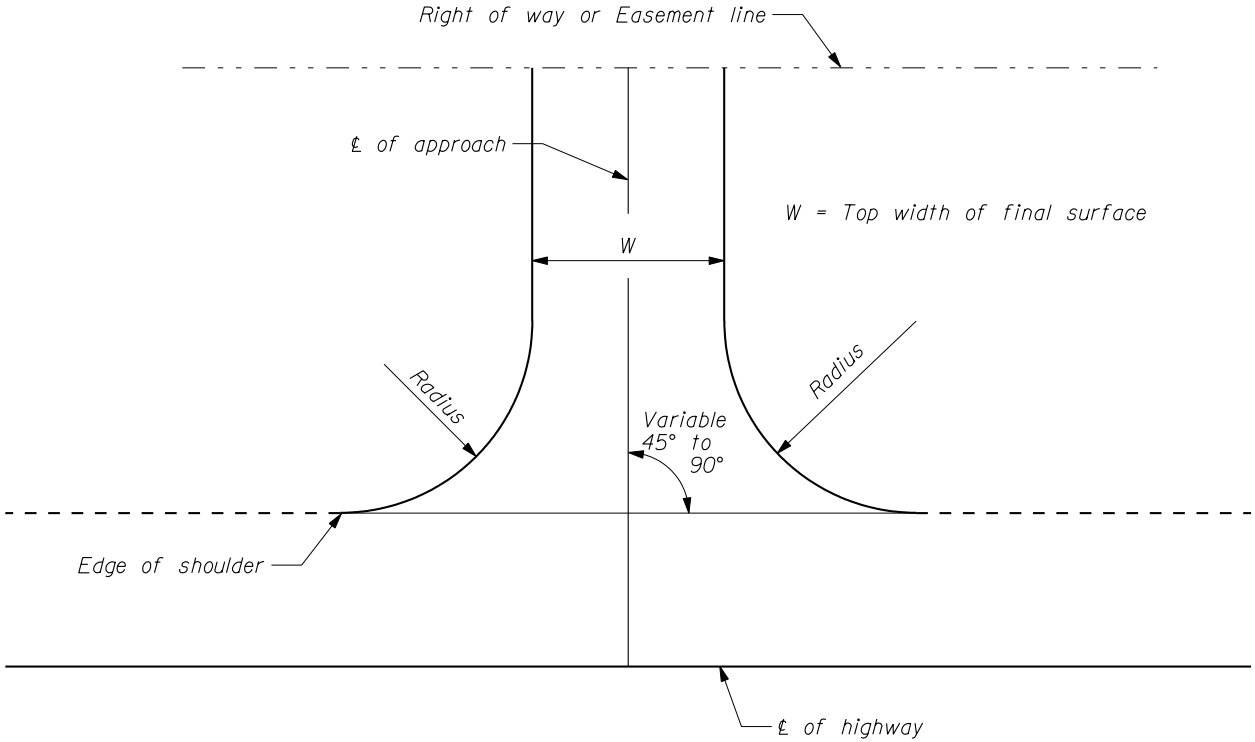
APPROACH PROFILE



ROAD APPROACH LOCATIONS  
ON PLAN SHEETS

NO SCALE

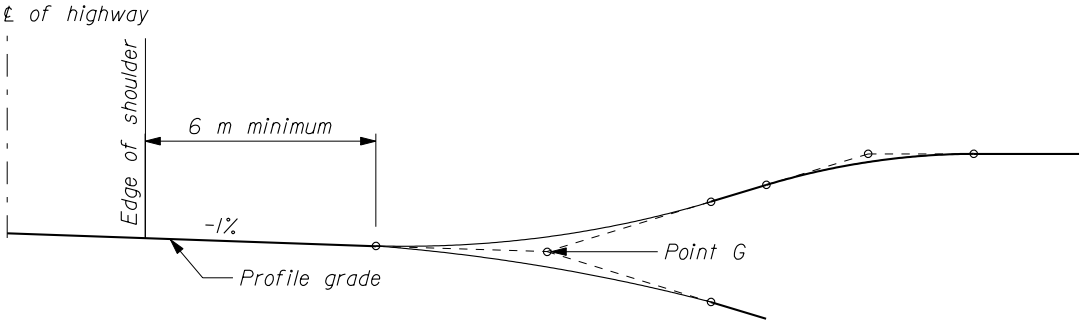
|   |        |
|---|--------|
| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>WESTERN FEDERAL LANDS HIGHWAY DIVISION |        |
| DETAIL  |        |
| STANDARD IDAHO<br>ROAD APPROACH   |        |
| DETAIL APPROVED FOR USE 3/2003  | DETAIL |
| REVISED:  | W200-5 |



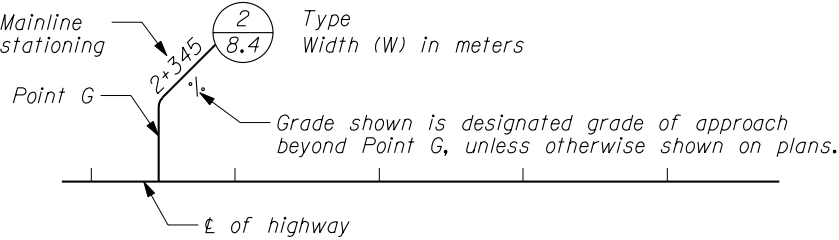
APPROACHES FOR UNCURBED HIGHWAYS  
TYPE 1 AND TYPE 2

NOTE:

1. TYPE 1 APPROACH:  
Top width (W) - 4.8 m minimum  
Radius - 6 m minimum
2. TYPE 2 APPROACH:  
Top width (W) - 7.2 m minimum  
Radius - 9 m minimum
3. GRADING REQUIREMENTS: Construct sideslopes of finish approaches compatible with adjacent roadway construction.
4. PAVEMENT STRUCTURE REQUIREMENTS: Extend the surface course to the right-of-way or easement line unless otherwise shown on the plans.
5. Finish approaches to public roads used for commercial purposes with same treatment as shown for the adjacent roadbed.
6. Finish other approaches with aggregate base. Provide a surface course of the same treatment as shown for the adjacent roadbed, but do not exceed 40 mm in depth.
7. Dimensions not labeled are in millimeters.



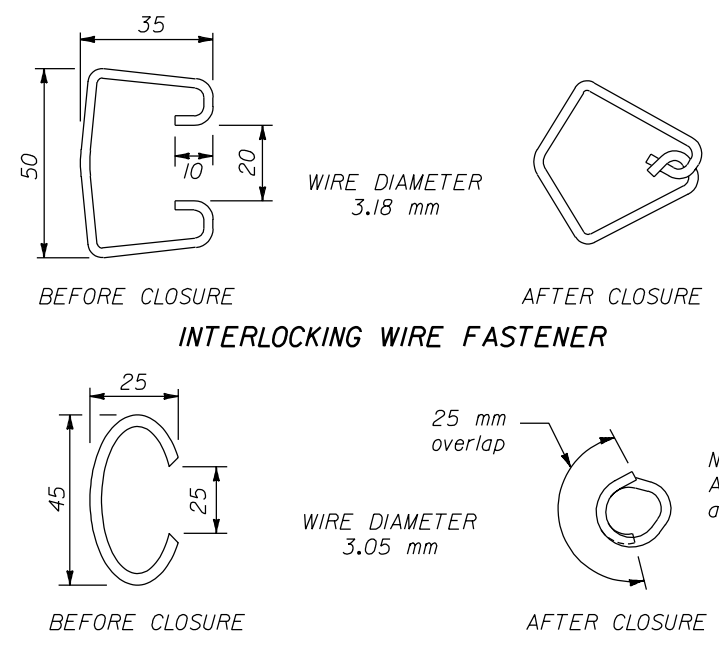
APPROACH PROFILE



ROAD APPROACH LOCATIONS  
ON PLAN SHEETS

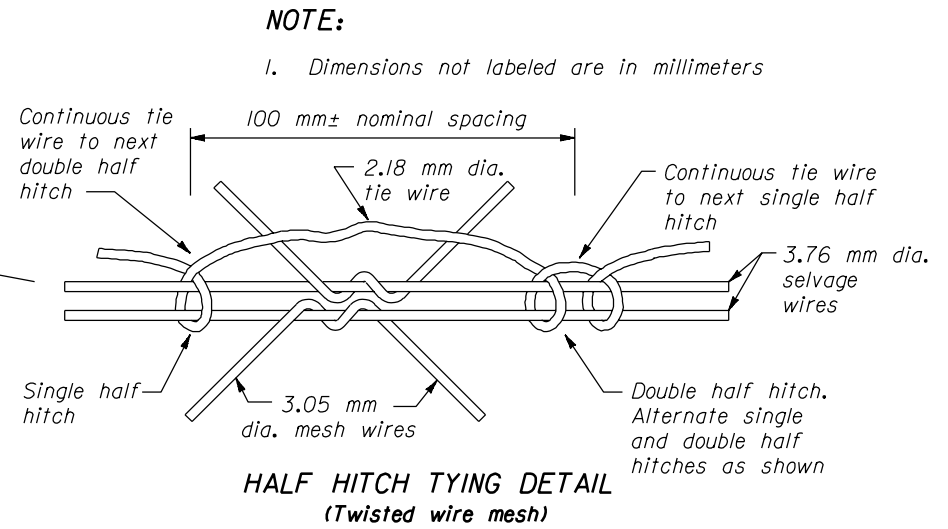
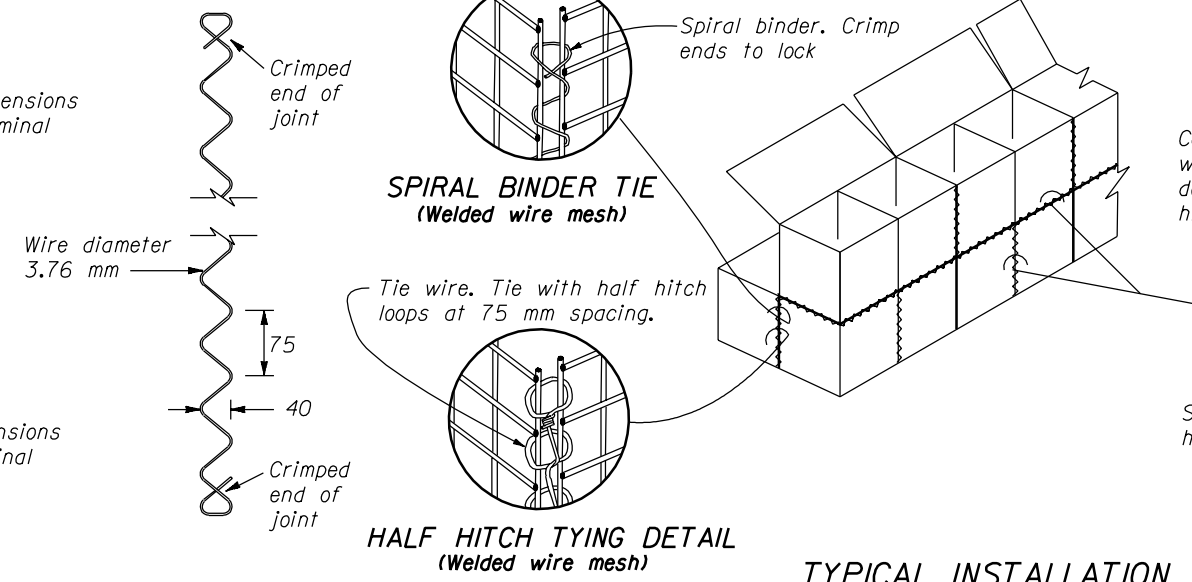
NO SCALE

|   |         |
|---|---------|
| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>WESTERN FEDERAL LANDS HIGHWAY DIVISION |         |
| METRIC DETAIL   |         |
| STANDARD IDAHO<br>ROAD APPROACH   |         |
| DETAIL APPROVED FOR USE 3/1996  | DETAIL  |
| REVISED: 12/2000 3/2003   | WM200-5 |



NOTE:  
All dimensions  
are nominal

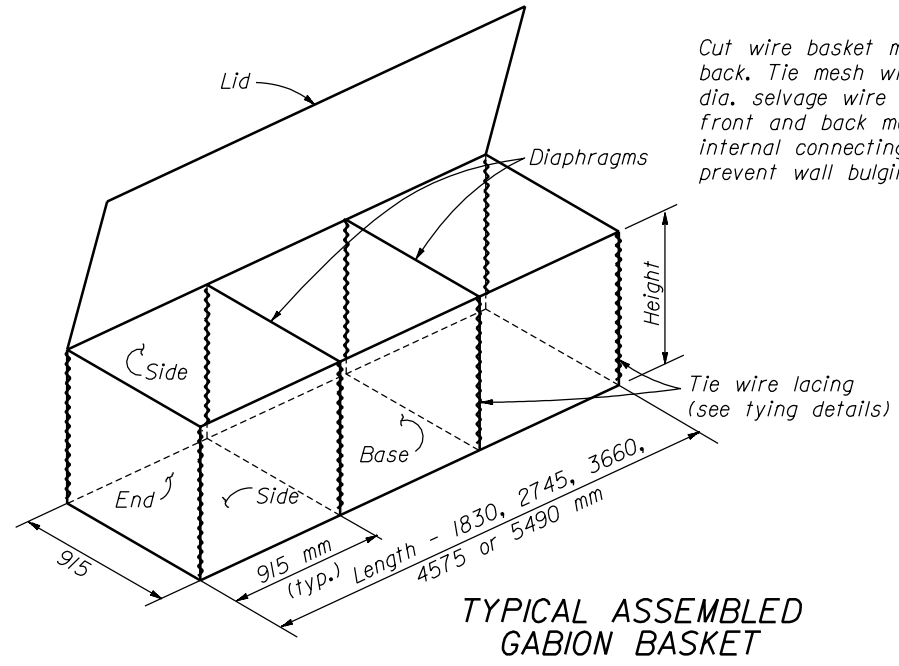
NOTE:  
All dimensions  
are nominal



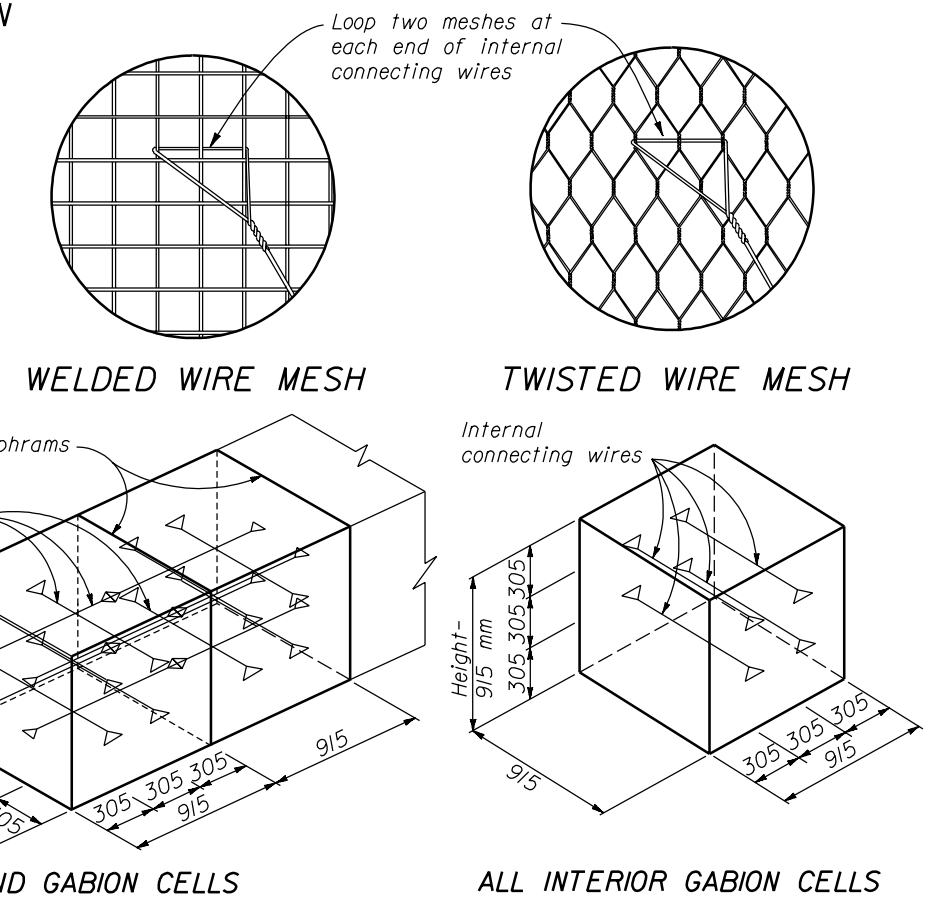
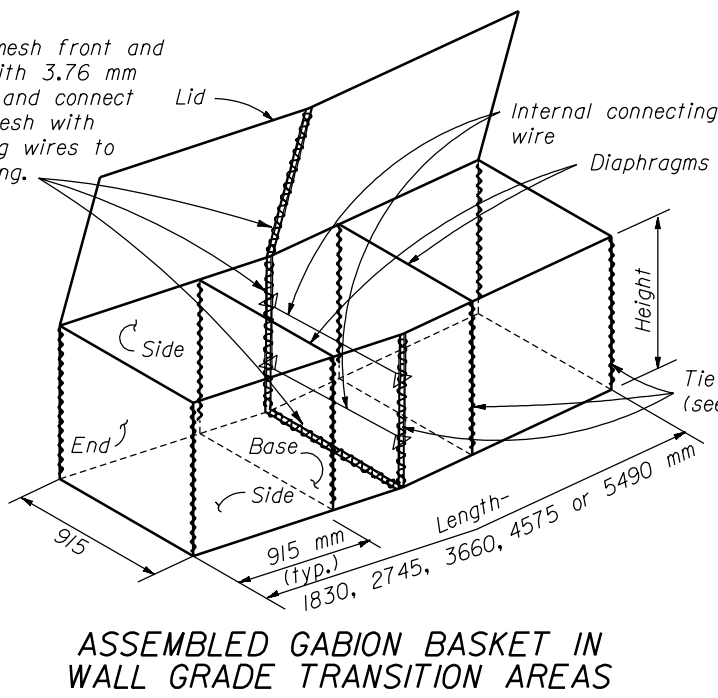
NOTE:  
1. Dimensions not labeled are in millimeters

### TYPICAL INSTALLATION GABION BASKETS

SPIRAL BINDER 3.76 mm DIA.

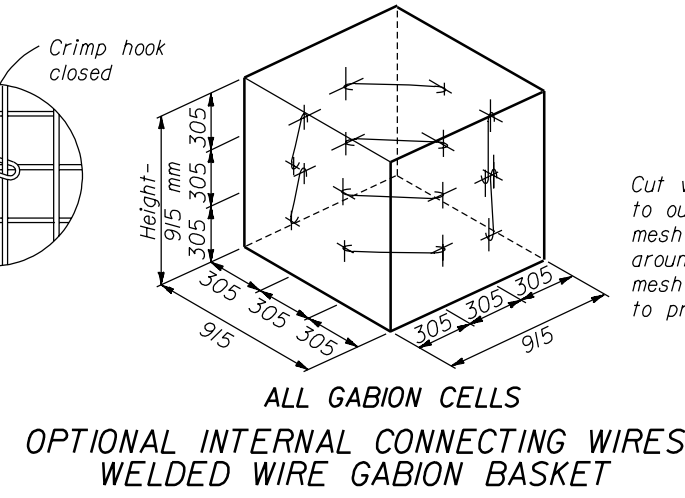
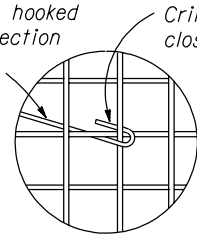


Cut wire basket mesh front and back. Tie mesh with 3.76 mm dia. selvage wire and connect front and back mesh with internal connecting wires to prevent wall bulging.

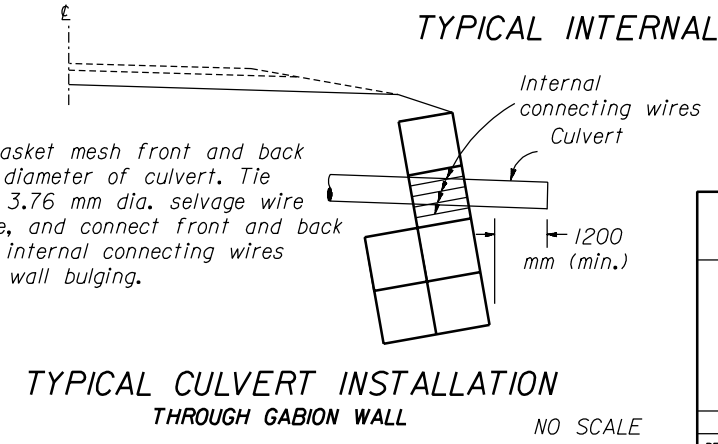


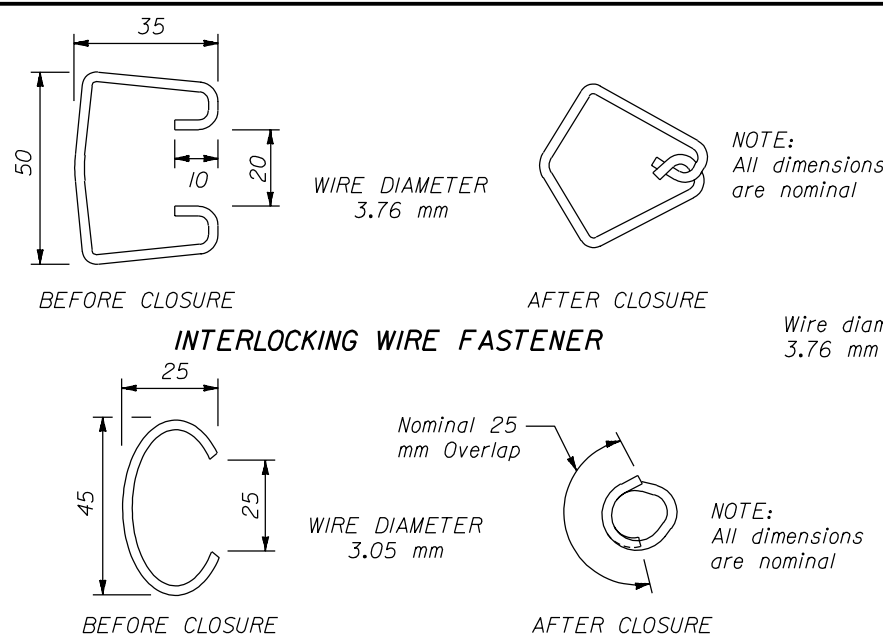
| NOMINAL SIZES AND CAPACITY OF GABION BASKET |                |        |                      |                         |
|---|----------------|--------|----------------------|-------------------------|
| Size Code Letter                            | Size in meters |        | Diaphragm Partitions | Capacity m <sup>3</sup> |
|   | Length         | Height |                      |                         |
| A   | 1.83           | 0.915  | 1                    | 1.5                     |
| B   | 2.75           | 0.915  | 2                    | 2.3                     |
| C   | 3.66           | 0.915  | 3                    | 3.1                     |
| X   | 4.58           | 0.915  | 4                    | 3.8                     |
| Y   | 5.49           | 0.915  | 5                    | 4.6                     |
| D   | 1.83           | 0.45   | 1                    | 0.8                     |
| E   | 2.75           | 0.45   | 2                    | 1.1                     |
| F   | 3.66           | 0.45   | 3                    | 1.5                     |
| G   | 1.83           | 0.30   | 1                    | 0.5                     |
| H   | 2.75           | 0.30   | 2                    | 0.8                     |
| I   | 3.66           | 0.30   | 3                    | 1.0                     |

3.76 mm dia. stiffener hooked at intersection of wires.

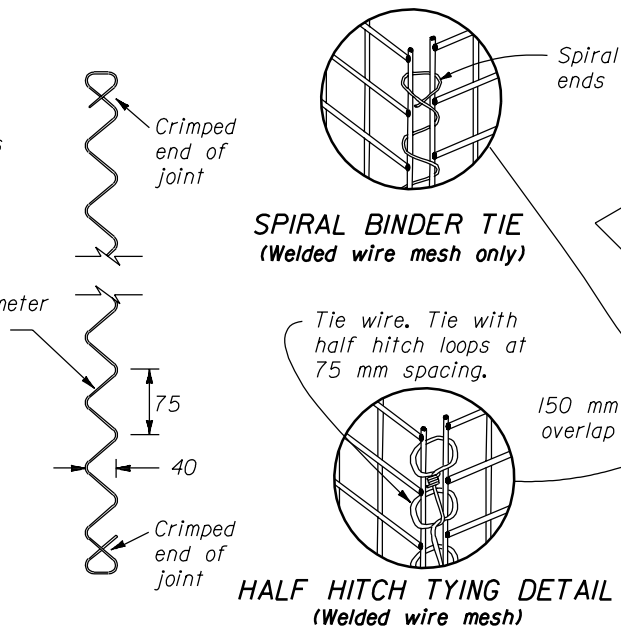


Cut wire basket mesh front and back to outside diameter of culvert. Tie mesh with 3.76 mm dia. selvage wire around pipe, and connect front and back mesh with internal connecting wires to prevent wall bulging.

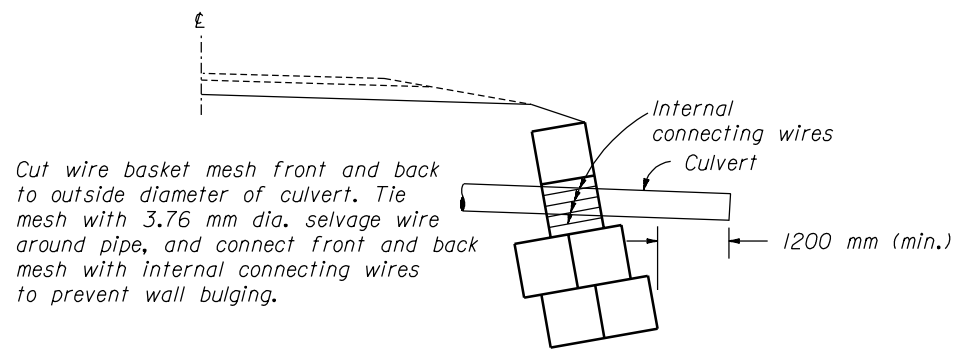
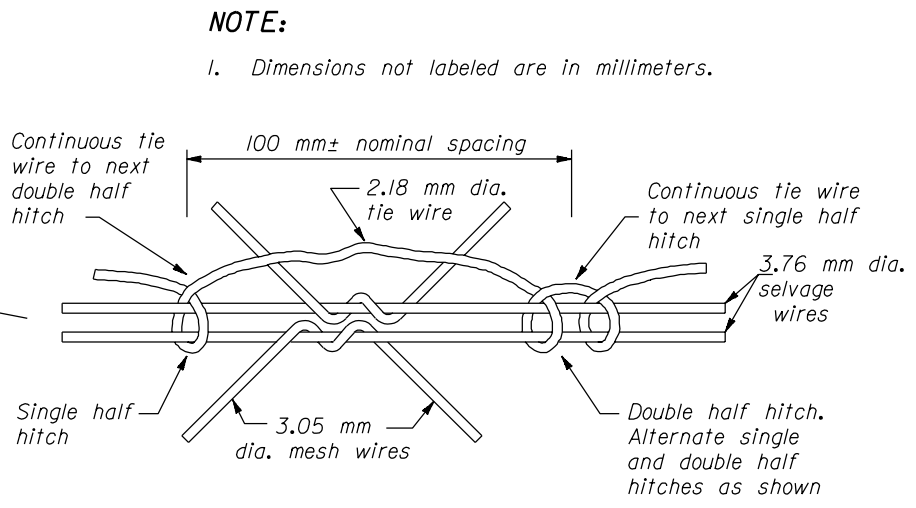
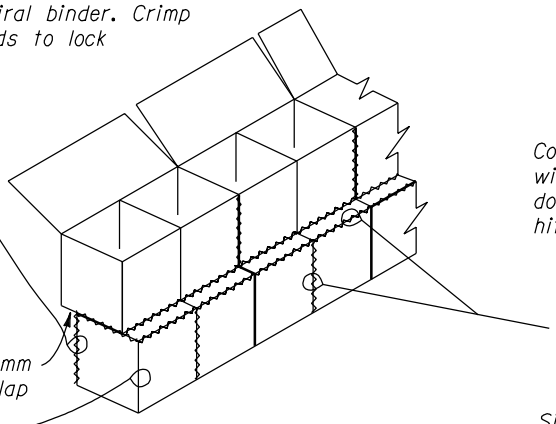




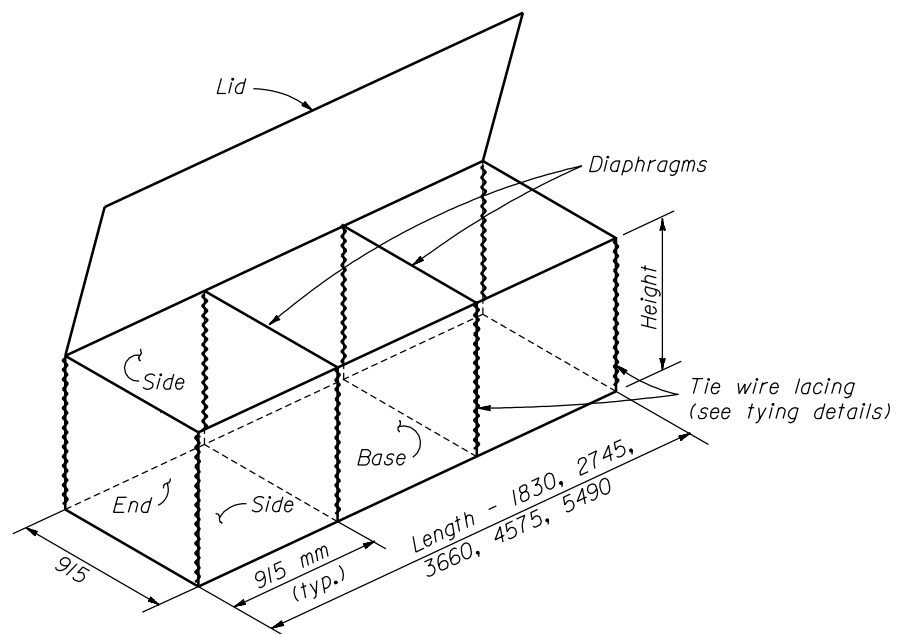
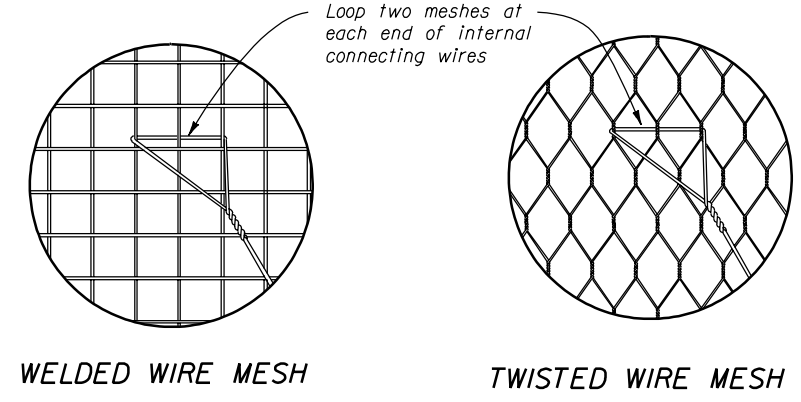
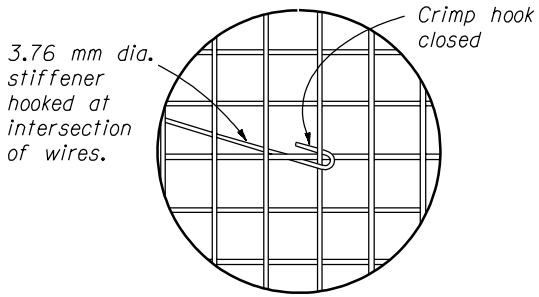
ALTERNATE TYING FASTENERS



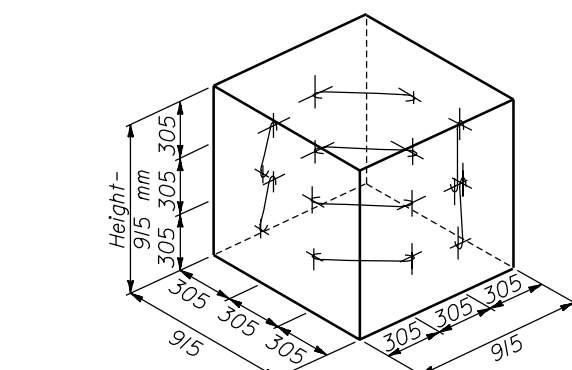
SPIRAL BINDER 3.76 mm DIA.



TYPICAL CULVERT INSTALLATION THROUGH GABION WALL

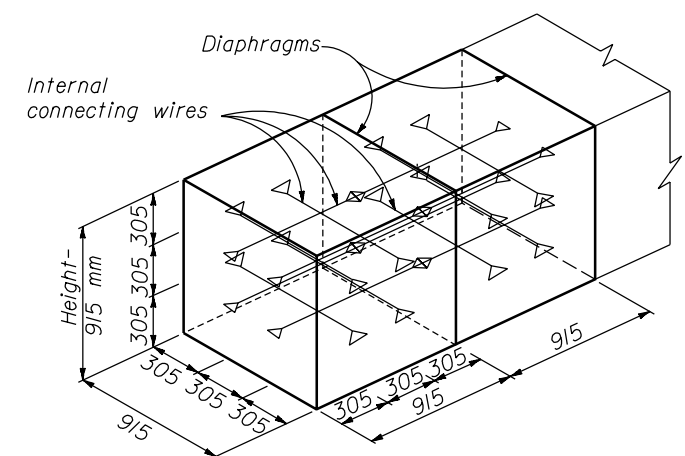


TYPICAL ASSEMBLED GABION BASKET

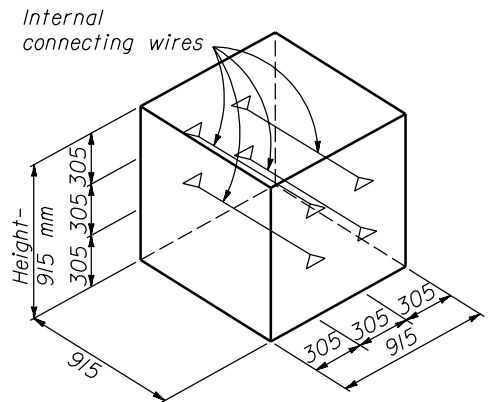


OPTIONAL INTERNAL CONNECTING WIRES WELDED WIRE GABION BASKET

| NOMINAL SIZES AND CAPACITY OF GABION BASKET |                |        |                      |             |
|---|----------------|--------|----------------------|-------------|
| Size Code Letter                            | Size in meters |        | Diaphragm Partitions | Capacity m3 |
|   | Length         | Height |                      |             |
| A   | 1.83           | 0.9/5  | 1                    | 1.5         |
| B   | 2.75           | 0.9/5  | 2                    | 2.3         |
| C   | 3.66           | 0.9/5  | 3                    | 3.1         |
| X   | 4.58           | 0.9/5  | 4                    | 3.8         |
| Y   | 5.49           | 0.9/5  | 5                    | 4.6         |

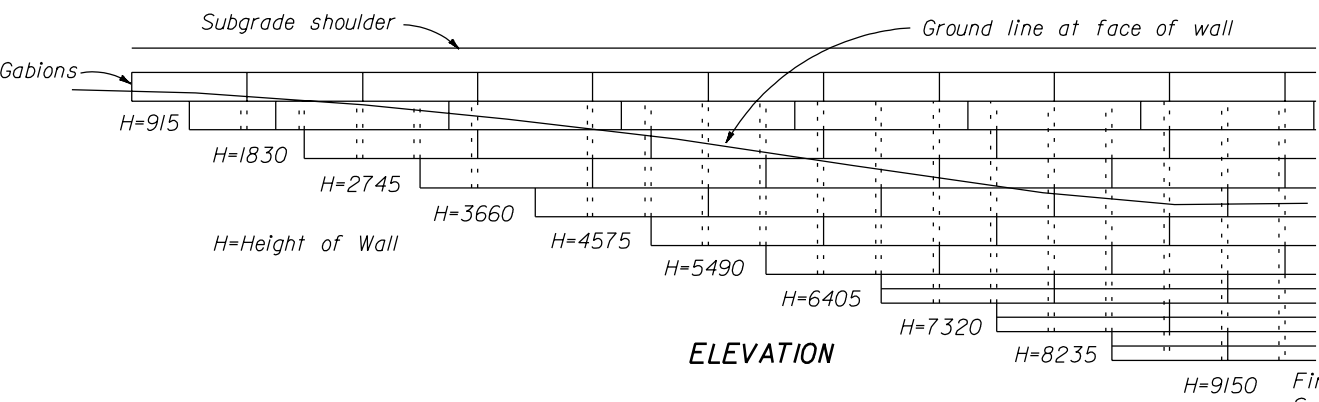
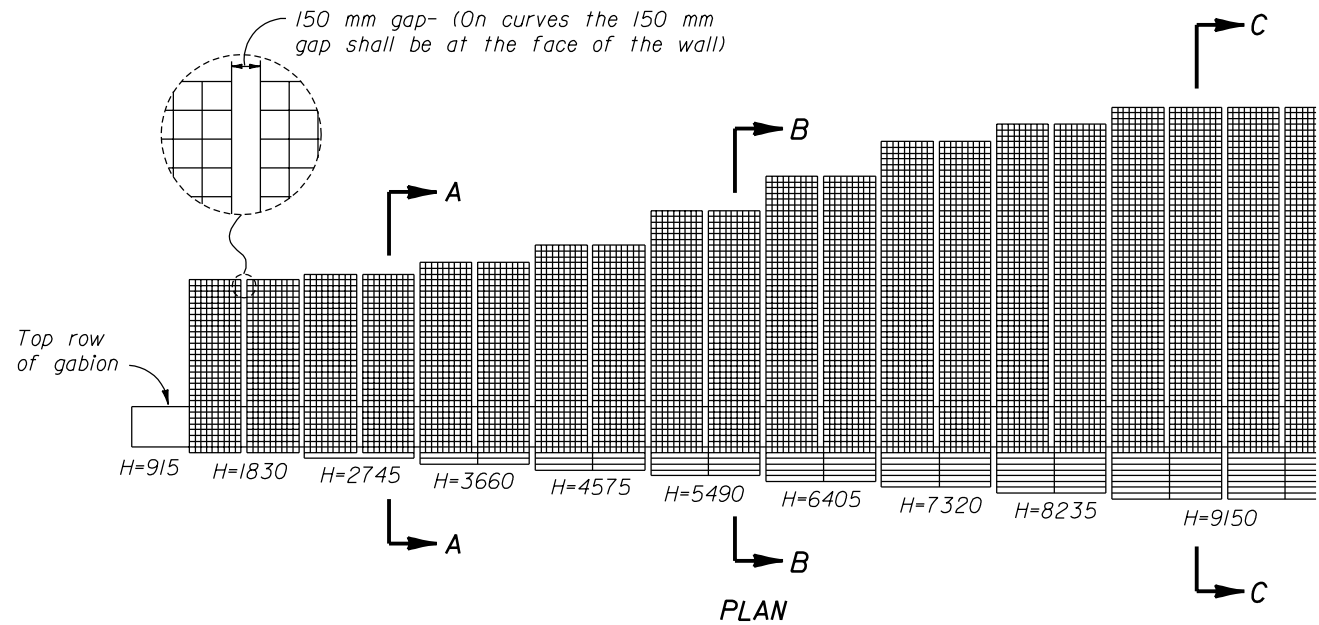


TYPICAL INTERNAL CONNECTING WIRES

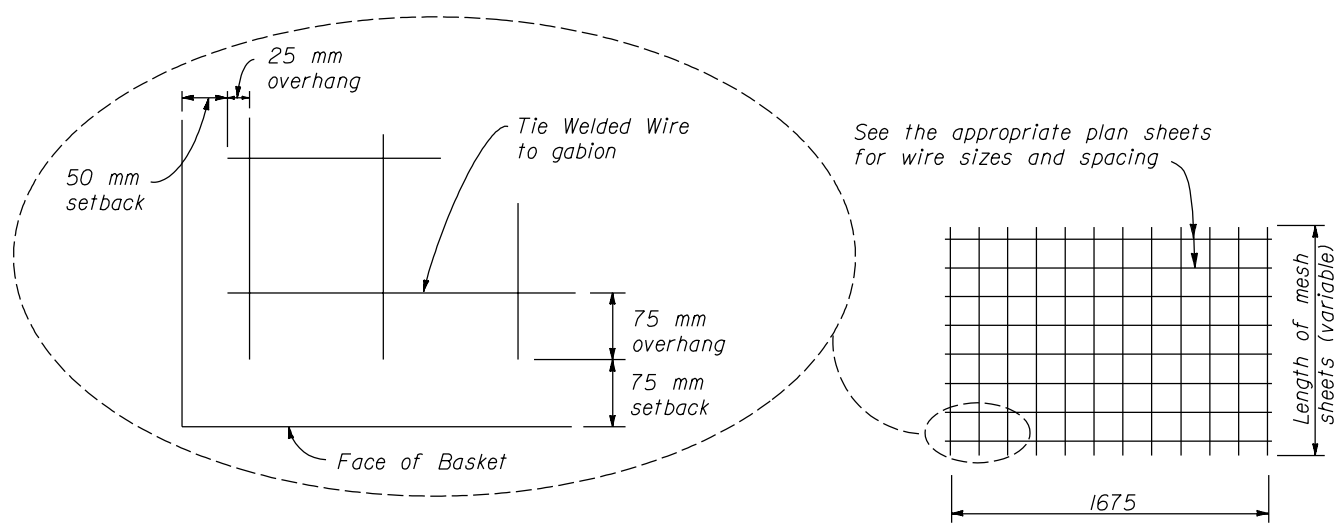


|   |          |
|---|----------|
| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>WESTERN FEDERAL LANDS HIGHWAY DIVISION |          |
| METRIC DETAIL   |          |
| GABION FACED WALL   |          |
| DETAIL APPROVED FOR USE 3/1996  | DETAIL   |
| REVISED:  | WM253-51 |

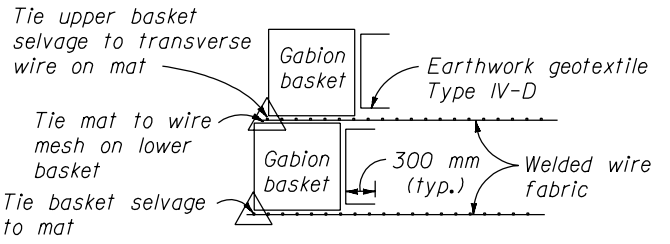
NO SCALE



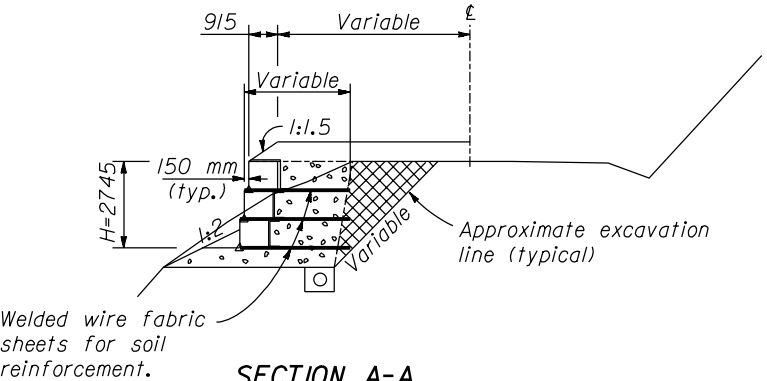
TYPICAL GABION WALL



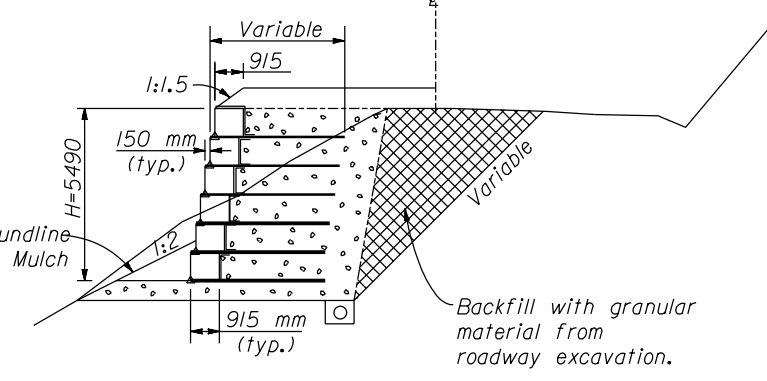
WELDED WIRE FABRIC SHEETS FOR SOIL REINFORCEMENT



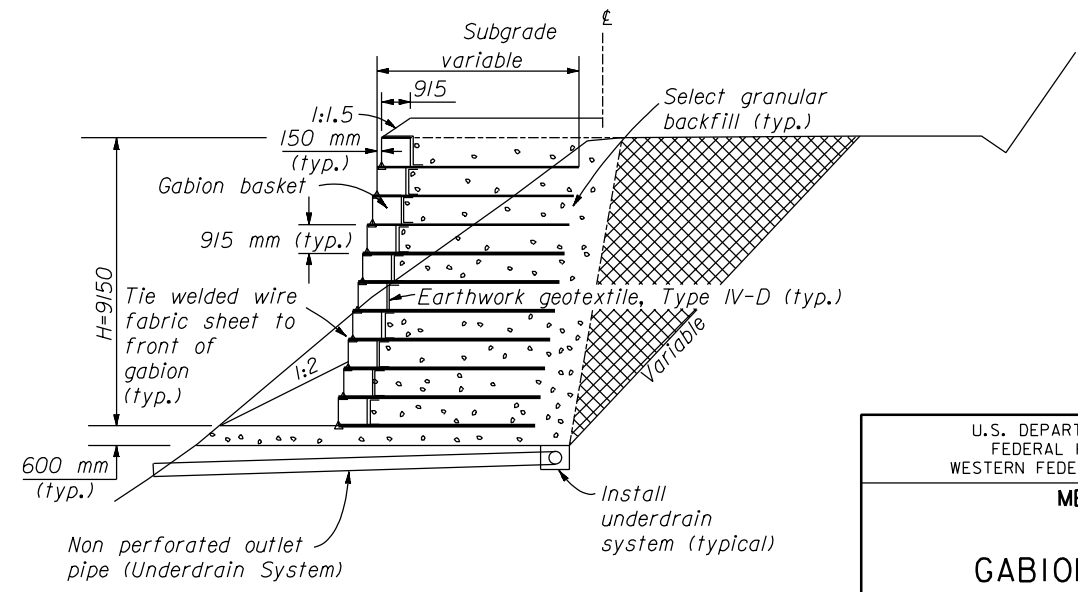
TYPICAL CONNECTION DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:

1. Dimensions not labeled are in millimeters.
2. The welded wire fabric sheets vary in length within each wall. The height (H) of the vertical face of the wall determines the length of the welded wire fabric for the entire section. See other plan sheets for fabric lengths, wire sizes and spacing and number of mats. Where the wall construction requires the width of the welded wire fabric sheets to be less than 1650 mm, the fabric wire may be field cut to fit. Cut fabric at center of mesh of welded wire fabric sheets.
3. Place layers of welded wire fabric sheets with 150 mm gaps between sheets. The 150 mm gaps are measured at the face of the wall. Connect the welded wire fabric sheets with spiral binders or tie wire to the front edge of each gabion basket.
4. The heights and quantities are subject to field adjustment. Any increase in wall heights over those shown on the plans require investigation to determine that the safe bearing pressure is not exceeded.
5. Average design assumption values. See the Geotechnical Report, if available, for site specific values.  
unit weight of backfill material 20.8 kN/m<sup>3</sup>.  
unit weight of filled gabions is 17.6 kN/m<sup>3</sup>.  
φ angle = 35° for backfill material.

NO SCALE

|   |                    |
|---|--------------------|
| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>WESTERN FEDERAL LANDS HIGHWAY DIVISION |                    |
| METRIC DETAIL   |                    |
| GABION FACED WALL   |                    |
| DETAIL APPROVED FOR USE 3/1996<br>REVISED: 2/1998   | DETAIL<br>WM253-52 |